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ABSTRACT

In this Masters Thesis, the message effectiveness and cost effectiveness (in terms of costs and monetary benefits) of two interpretive audio messages were evaluated. Ninety-nine randomly selected visitors to a Central Ohio interpretive museum were exposed to one of two audio tape recorded messages. One message used interpretive technique; the other did not. The visitors were surveyed after treatment and the data were analyzed by students' t-test and Chi-square analysis at a significance level of 5%. Also, sales revenue at the museum gift shop for the study periods was recorded. No statistically significant difference between the audio messages was found. However, visitor response to open-ended survey items supports the use of interpretive technique. No conclusions could be drawn regarding cost-effectiveness. (MR)

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# INTERPRETING A MUSEUM EXHIBIT: THE MESSAGE EFFECTIVENESS AND COST EFFECTIVENESS OF ALTERNATIVE AUDIO MESSAGES

A Thesis

Presented in Partial Fulfillment of the Requirements
for the Degree Master of Science

by

Susan K. Hambleton, B.S.

The Ohio State University

1978

Approved by

John F. Shroyer
Adviser
School of Natural Resources

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GRADUATE SCHOOL

The following information is to be submitted with the final copy of the thesis. Please type.

NAME Susan Kay Hambleton DEGREE M.S.

DEPARTMENT Natural Resources

TITLE OF THESIS Interpreting a Museum Exhibit: The Message Effectiveness and Cost Effectiveness Of Alternative Audio Messages.

Summarize in the space below the purpose and principal conclusions of your thesis

The purpose of this thesis was to evaluate the effectiveness of interpretive technique as a guide for composing audio messages interpreting a museum exhibit. Both the message effectiveness and cost effectiveness of two audio messages (one composed using interpretive technique as a guide and the other composed without using interpretive technique) was determined.

Results of statistical tests of significance indicated no statistically significant difference between the audio messages. However, based on the visitors' responses to open-ended questions concerning their reasons for ratings, a trend which supports the use of interpretive technique was discovered.

John T. Wagner
Adviser's Signature

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# CHAPTER 1

# INTRODUCTION

## Interpretation Defined

The Association of Canadian Interpreters defines interpretation as "any communication process designed to reveal meanings and relationships of our cultural and natural heritage to the public through firsthand involvement with an object, artifact, landscape, or site" (Peart, 1977).

Two characteristics are common to all forms of interpretation (Cherem, 1977):

1. It is an on-site activity offering visitors firsthand experience with a particular site or with subject matter or objects associated with a site.
2. It serves voluntary, non-captive visitors who are in a leisure frame-of-mind and who are seeking an enjoyable experience.

Basic interpretive technique, which can be used to bring a site or subject matter to life for the visitor, includes Tilden's (1967) interpretive principles, the use of active language, and the use of non-verbal languages.

Tilden's interpretive principles (1967), modified by Cherem (1977), are:

1. Relate the interpretive message to the life of the audience.
2. Provoke the attention or curiosity of the audience.
3. Reveal the subject to the audience through a unique viewpoint.
4. Address the whole of the human experience rather than a segment of it.
5. Strive for message unity.

Active language includes the use of metaphor, simile, active words and phrases and personal words. These forms are rich in evoked mental imagery and add spark to an interpretive message. In addition, various non-verbal languages, such as color, texture, special audio effects, and body language are used by the interpretor[1] to capture an audience's attention and hold its interest (Cherem, 1977).

Interpretation in Museums

Burcaw (1975) states that "museums collect, record, and preserve in order to interpret". We know that sound interpretation depends on "meticulous research" (Tilden, 1967). Therefore, interpretation complements the museum functions of collection and preservation (of objects and specimens) and of research.

---

[1] In this report, interpretor will be spelled with an 'or' in order to distinguish him/her from a foreign language translator (Cherem, 1977).

Interpretation not only complements other museum functions, but its two basic characteristics are also fulfilled within a museum setting. First, visitors have the opportunity to experience firsthand the site's (i.e., the museum's) objects and specimens. Second, every year millions of visitors come to museums by choice (Thier and Linn, 1976) and in a leisure frame-of-mind (Burcaw, 1975).

For some museums, interpretation is becoming a major goal. The National Park Service's site museums exist solely to interpret the site to the visitor (Lewis, 1959). In October, 1974, the National Museum of Natural Sciences, Ottawa, Ontario added a "team of interpreters" to its staff with significant success (Sore, 1977).

A number of interpretive services are appropriate for a museum to provide for its visitors. These can be personal services through which the visitor has direct contact with an interpretor; or non-personal, through which the visitor has contact with an interpretor indirectly by means of a device (Sharpe, 1976) (Table 1).

Interpretive Exhibits

Exhibits, displaying a museum's objects and specimens, comprise a non-personal interpretive service common to nearly all museums. An exhibit must not only communicate a concise message, it must first attract and hold the attention of a non-captive visitor. Museum professionals recognize the

Table 1. Interpretive Services Adapted to a Museum from Sharpe, 1976.

| PERSONAL OR ATTENDED SERVICES | | | | NON-PERSONAL OR UNATTENDED SERVICES | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Museum Office | Tours | Auditorium Talks | Cultural Demonstration | Portable Cassettes | Publications | Self-Guided Tours | Indoor Exhibits | Museums |
| Roving Duty | | Amphitheater Talks | Living Interpretation | Audio Stations | Signs and Labels | | Outdoor Exhibits | |
| Alcove or Mall Duty | | | | | | | | |
| Roadside Info Booth | | | | | | | | |
| Information Desk | | | | | | | | |
| Entrance Station | | | | | | | | |

1. Information Services
2. Conducted Activities
3. Talks to Groups
4. Living Interpretation
5. Audio Devices
6. Written Materials
7. Self-Guided
8. Exhibits
9. Museum

need for lively, interesting, and participatory exhibits (Coen and Wright, 1975; Morano, 1972; Thier and Linn, 1976). Passive exhibits, characterized by an excess or lack of objects, by long explanatory labels, or by the lack of visitor involvement, do not meet this need. However, interpretive exhibits which relate to the everyday life of the visitor, and which allow the visitor to become actively involved, do (Cherem, 1977).

Researchers have shown that dynamic and changing stimuli, violent subjects, and messages tied to a central theme are preferred by visitors (Washburne and Wagar, 1972). Although more realistic exhibits, such as dioramas, attract visitor interest, this interest may be affected by an exhibit's contrast, variablity, and uniqueness when compared to other exhibits in the museum (Shiner and Shafer, 1975).

Audio Messages

Interpretation of exhibits requiring longer verbal messages can be accomplished through the use of audio devices. These devices have numerous advantages including increased visitor concentration on the exhibit, longer visitor attention span for audio messages, and the ease of incorporating special sound effects into the message (Alderson and Low, 1975; Sharpe, 1976).

A good audio message is usually brief, concise, and conversational. Spencer-White (1976) suggests a maximum

length of three minutes. To aid in the achievement of a conversational tone, the use of short sentences and personal pronouns is recommended (Spencer-White, 1976).

Any truly effective interpretive service will achieve the interpretive program's objectives. Because museum administrators are concerned with monetary expenditures as well as with meeting their institution's goals and objectives, a tool which would provide information related to an interpretive service's costs and its effectiveness in achieving program objectives would be particularly useful. Cost-effectiveness analysis is such a tool.

Cost-Effectiveness Analysis in Interpretive Settings

Forbes (1974) describes a framework for cost-effectiveness analysis in educational programs which may be adaptable to interpretive settings. Four elements which he says are essential to consider in cost-effectiveness analysis are: 1.) program descriptions, 2.) student characteristics, 3.) effectiveness measures, and 4.) costs.

Items to be included in the program description (program objectives, implementation and operational activities, resource requirements and availability, program history, and external constraints) are often an integral part of an interpretive prospectus. Student characteristics, included because one program may be more effective for particular groups or subgroups, can be expressed more comprehensively

in interpretive settings as "visitor characteristics". Effectiveness is a measure of the level of achievement of the the program's objectives, stated in measurable terms. Costs include planning and implementation costs (capital) and costs associated with program operations (operating costs).

In the field of interpretation, one more factor can be considered: the monetary benefits which are the result of a strong interpretive program. These benefits may include increased revenue from visitor admission charges or increased sales of gift shop items. Also an effective and publicly popular interpretive program may result in increased program funding. A fourth monetary benefit may be decreased cost of an interpretive service when defined in terms of cost per visitor contact.

In this study, the message effectiveness and cost effectiveness (in terms of costs and monetary benefits) of two audio messages were evaluated.

## CHAPTER 2.

## THE PROBLEM STATEMENT

In the field of interpretation, formal studies focused on cost effectiveness analysis are minimal. Only one reference, a study by Putney and Wagar (197_) in preparation, is listed in Interpretive Research: A Bibliography (Winzeler and Cherem, 1976). A number of researchers have studied the effectiveness of audio messages in an interpretive setting (Feldman, 1975; Mahaffey, 1972; Screven, 1975; Wagar, 1976; Shiner and Shafer, 1975).

This thesis evaluated the message and cost effectiveness of alternative audio messages, one of which incorporated interpretive technique and the other of which did not. Message effectiveness was determined by measuring the visitor's interest in and enjoyment of the audio message and their immediate recall of specific information presented in the message. Cost effectiveness was evaluated by

measuring the amount of money a visitor says he would spend to hear the message again, revenue generated by sales of certain gift shop items, and production costs.

Because of tremendous advances in recorded sound technology, audio devices for use by interpretors are readily available at reasonable costs. Smith-White in "The Use of Audio Devices" (Sharpe, 1976) and Alderson and Low (1976) suggest that audio messages be brief, understandable, and conversational. This study evaluated the application of interpretive technique as an additional guideline for composing audio messages.

Cherem's model of interpretation (Figure 1) enables us to visualize how this study fits into the overall framework

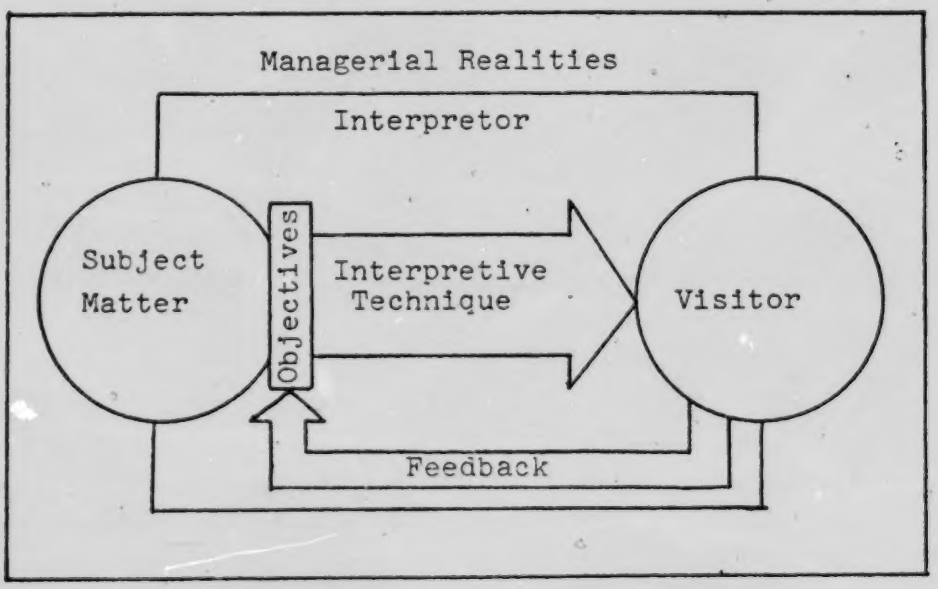


Figure 1. Model of Interpretation (Cherem, 1977)

of interpretation. Cost effectiveness analysis lies within the managerial realities plane. This plane includes such issues as budgets, personnel, and agency policy. The interpretive service tested here was an audio message and the interpretive technique involved the application of Tilden's interpretive principles, active language, and non-verbal languages to that audio message. A questionnaire and an interview were used to obtain feedback from visitors.

The general purposes of this study as stated above were transformed into the following specific research hypotheses:

1. The visitor's interest and enjoyment is greater for audio messages composed using interpretive technique as a guideline than for audio messages composed without using interpretive technique as a guideline.
2. The visitor's immediate information recall is greater for audio messages composed using interpretive technique as a guideline than for audio messages composed without using interpretive technique as a guideline.
3. An audio message composed using interpretive technique as a guideline is more cost effective than audio messages composed without using interpretive technique as a guideline.

# CHAPTER 3

## LITERATURE REVIEW

A number of studies dealing with the effectiveness of media have been conducted in the fields of advertising, education, interpretation, and speech and communications.

In the field of marketing and advertising, market researchers conduct studies to determine the effectiveness of advertising compaignes. A variety of media (TV, radio, newspapers, billboards, magazines) may be compared for effectiveness. The consumer's awareness of a product or company, recall of advertising messages, and attitudes or attitude changes are frequently measured (Wolfe, et al., 1962).

In a survey of research on cost-effectiveness analysis of educational media, Caffarella (1977) noted that only 34 of approximately 300 studies reviewed met established standards for research. Most of these studies evaluated TV in the classroom, and some were too old to be considered valid

due to rapid technological advances. Also, a large majority of the studies involving educational media compared media with traditional classroom instruction.

The effects of audio message variations on audience learning has been researched in communications and speech. Travers (1967) summarized a number of studies evaluating such variations as rate of speech and level of material difficulty. Optimal rates of narration, such as 160 words per minute (Diehl, et al., 1959; Goodman-Malamuth, 1957) and 111 to 141 WPM (Zuckerman, 1949),were averaged by Travers to be 160 WPM if the text is simple and if the listener's time is not a factor. Findings have also demonstrated that listening comprehension can be predicted by readablility formulas, such as the Flesch formula (Flesch, 1949), which are used to measure the readability of the message texts (Chall and Diel, 1948; Park, 1944; Allen, 1952).

The effectiveness of audio messages have been studied by interpretive researchers and museum professionals. Shiner and Shafer (1975) studied printed and audio messages in a museum. They compared the time the visitors spent reading or listening to the messages with time actually required to read or hear the entire message. They concluded that reading or listening time was not a good measure of the exhibit's attractiveness, but that its uniqueness among other exhibits may be.

In a study comparing the effectiveness of cassette tapes, trail signs, and trail leaflets, the tapes were found to be most effective. Visitors preferred the audio messages over printed messages and retention of information presented on the cassettes was higher (Wagar, 1976).

Mahaffey (1972) reported similar findings. In his study, three media (audio message recorders, signs, and leaflets)used for a self-guided tour were compared. Again, visitors preferred the use of audio message devices over the printed media. Also, information retention was slightly higher for the audio messages. Mahaffey noted that visitors preferred a combination of media over a single medium.

That the effectiveness of media is affected by specific audiences has been demonstrated by Feldman (1975). In his study audio cassettes and brochures for use along an auto tour route were compared. In this case, the audio message was found to be superior to the printed message on the information recall criterion only for first time visitors to the park.

Among museum professionals, Screven has conducted a number of studies on the learning effectiveness of various media used to interpret exhibits. In one study (Screven, 1975), three different exhibit labels (original labels, supplemental information labels with questions, and supplemental information labels without questions), a punchboard keyed

to label questions, three types of audio messages (self-paced audio with questions, tape-paced audio with and without questions) and a booklet containing information similar to audio messages were compared. Results indicated that the audio messages were most acceptable to visitors. Also, information retention was highest for audio messages as a group. Among the three types of tapes, information retention was highest for the message without questions.

Generally, the literature suggests that audiences prefer audio communications and information recall is usually better when that information is conveyed via audio media. Whether interpretive technique (used as a guideline when composing audio messages) affects visitor enjoyment and immediate information recall in an interpretive setting was tested in this study.

# CHAPTER 4.

# METHODOLOGY

## The Research Setting

This study was conducted at the Ohio Historical Center, one of fifty historical sites and museums administered by the Ohio Historical Society. Located in central Franklin County, access to the Center from many parts of the state is available via Interstate Route 71. For 1977, the Properties Division of the Ohio Historical Society estimated visitation at 400,042 (256,931 from January to June and 143,111 from July to December).

The Ohio Historical Center displays over one and one-half acres of exhibits depicting the history, archaeology, and natural history of Ohio. The main offices of the Ohio Historical Society, a research library, and the state archives are located there. Other facilities include a

food service area and gift shop.

Interpretive services, such as guided tours of the museum's highlights, natural history talks, multi-media productions, and films, are conducted and/or produced by the staff members and volunteers. These services are offered to visitors during regular museum hours which are 9 A. M. to 5 P. M. on Monday through Saturday and 10 A. M. to 5 P. M. on Sunday.

Data for this study were collected in the Archaeology Mall, one of three malls on the exhibit floor. Located on the west side of the museum, the Archaeology Mall can be approached from the Natural History or History Malls or from the building's west entrance (Figure 2, p. 17 ). Exhibits in the Archaeology Mall depict the cultures of Ohio's prehistoric Indians by using artifacts, mannequins, and reproductions.

A life-size exhibit featuring everyday life in an Adena Indian village forms the eastern boundary of the Mall (Figure 3, p. 18 ). The major feature of the exhibit is the Adena house, a structure 18 feet in diameter constructed of tree bark. Two Indian mannequins, a small boy lying on the dirt floor and covered with animal skins and a woman scraping a frame-stretched skin, are positioned within the house. Tools and pottery, skins, and a small 'fire' are added to the house's interior (Figures 4 and 5, p. 19 ).

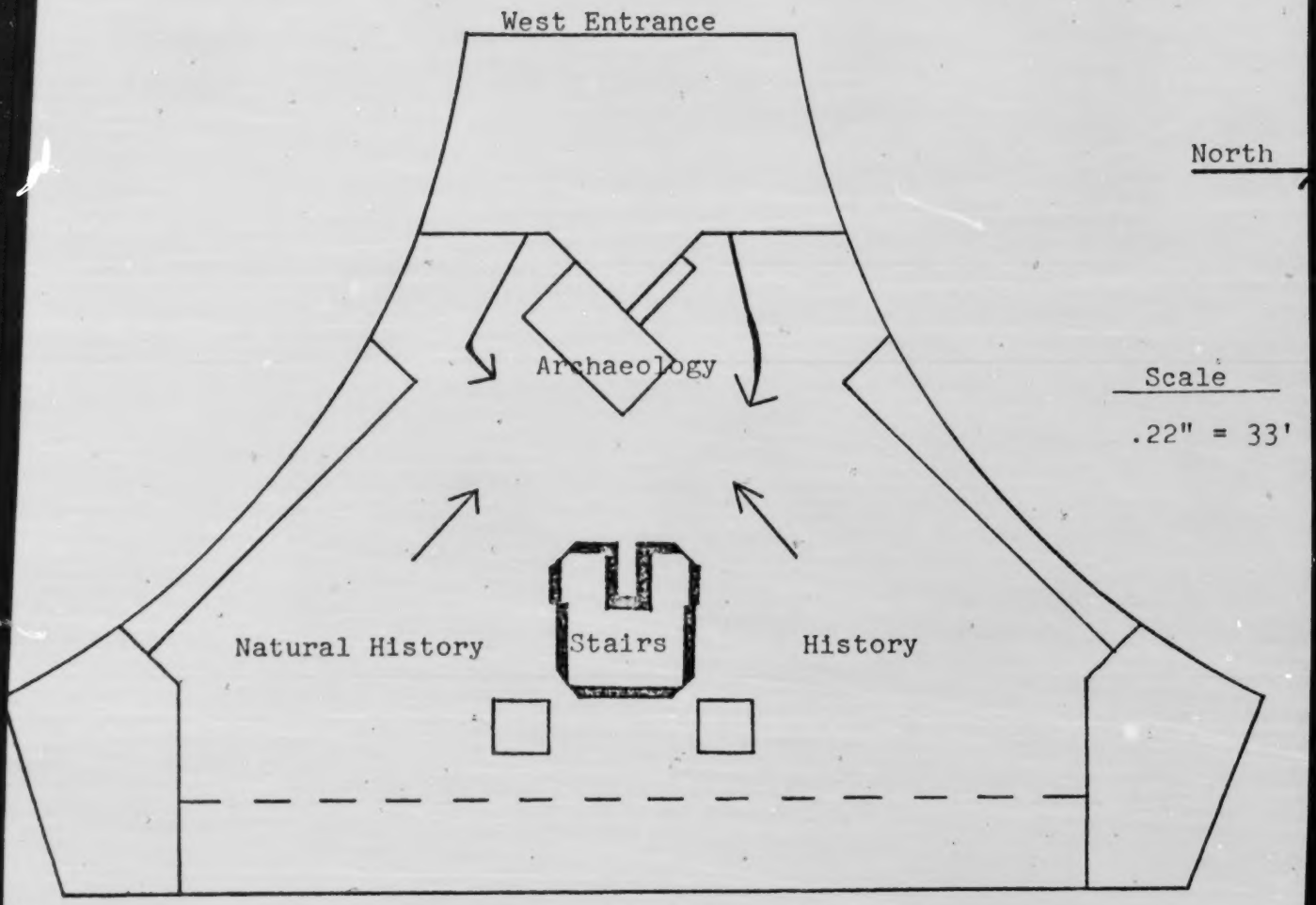


Figure 2. Plan of Exhibit Floor, Ohio Historical Center

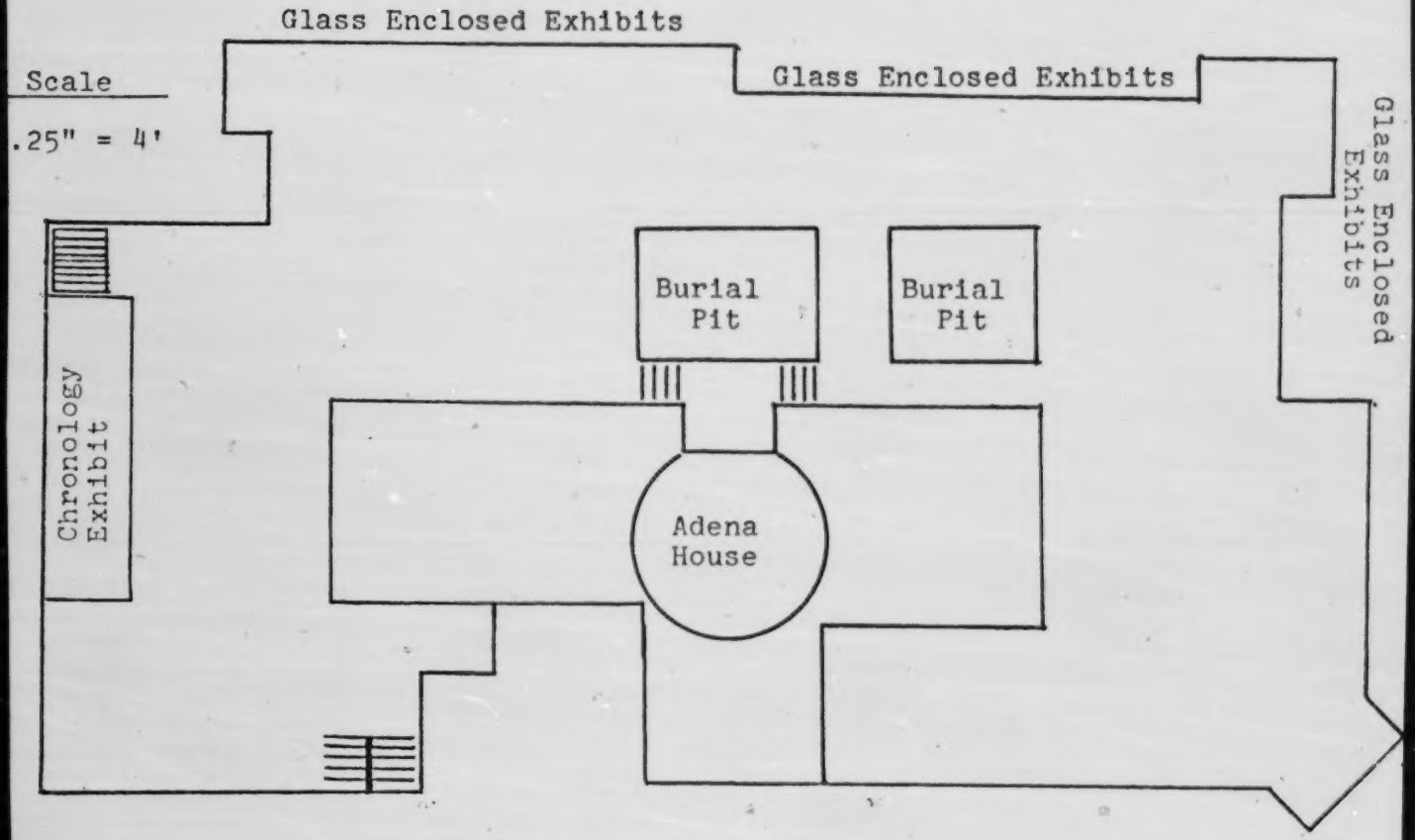


Figure 3. Floor Plan of Archaeology Mall, Ohio Historical Center

Figures 4 and 5. Photographs of Adena House Interior

The exhibit is lit from above by three skylights. A single spotlight is suspended from the ceiling of the house. Illumination of mannequins and objects surrounding the house is from additional spotlights.

An audio message interpreting Adena Indian culture is activated by a button located on a panel directly in front of the 'door' of the Adena house. The cassette-playing device, speaker, and wires are concealed within the house.

Design

An experimental design, the post-test only control group design (Gay, 1976), was used to test the hypotheses stated in Chapter 2. Criteria for experimental designs were met by:

1. randomly selecting subjects from the target population,
2. employing a control group, and
3. randomly exposing the subjects to the treatment, the control or experimental audio message.

The experimental message was an audio message composed using interpretive technique. The control message had been composed many months earlier by the museum's staff without using interpretive technique.

The "post-test only" design was chosen because the visitor's interest and enjoyment of the message was based

on hearing the message, and pretesting to determine the visitor's previous knowledge on the message content might have keyed him/her to the study.

Target Population

The target population of this study was visitors to the Ohio Historical Center during specified sampling times. The sample was chosen from among those visitors who listened to the audio message at the Adena house exhibit, who were thirteen years of age and older, and who were alone or in groups of six or less.

In order to be included in the sample the visitor had to listen to at least 20 seconds, about 10 percent, of the audio message. Also, the visitor had to begin to listen within 15 seconds of the beginning of the messages. These criteria were established because the visitor had to hear enough of the message in order to express an opinion. Also, the first immediate information recall question response was based on information occurring within the first 20 seconds of the message.

Even though subjects for most research projects in audio communications have been fairly close in age (all high school or elementary students), visitors thirteen years of age and above were sampled for this study. In an interpretive setting it is impractical to provide an interpretive service for a specific, narrow age group unless visitation

warrants such a service.

Tilden (1967) based his observation that interpretation for people under age twelve should be approached differently than interpretation for adults on experience. Although the exact age at which mental maturity occurs varies among professional psychologists, many agree that there is a difference in the mental processes of children and adolescents. For example, Crow (1956) states that the activity and interests of adolescents (13 to 18) are more specific than that of children. Piaget (1972) notes that eleven to fifteen year olds are capable of using adult reasoning and logic.

Groups of appropriate subjects numbering larger than six members were not included in the study. This arbitarily selected group size was influenced by the size of the viewing area in front of the Adena house exhibit. Larger groups of people would probably not be able to hear the audio message properly and would make sampling difficult.

Data and Instrumentation

The audio messages. Two audio messages interpreting Adena Indian culture were compared in this study. The differences between the messages were in the texts, the speaker's rate of speech, and the type of background accompaniment used.

An audio message which had been interpreting Adena Indian culture at the Adena house exhibit since 1975 was defined as the control message. The text of the

control message (Appendix B) provided the basic fact content for the text of the experimental message (Appendix A), that is, many of the same facts were contained in each. This was accomplished by first underscoring major concepts presented in the control message and than incorporating them into the experimental message using active language, personal words, and Tilden's interpretive principles wherever appropriate. The experimental message was reviewed and approved by Mr. William Keener, Curator of Education, and Ms. Martha P. Otto, Administrative Head of Archaeology, at the Ohio Historical Center, and by Dr. Gabriel J. Cherem, then of The Ohio State University.

Both messages were analyzed by means of the Flesch scale (Flesch, 1949) which is used to estimate reading difficulty and human interest levels of printed materials. The reading level is based on the printed article's average sentence length and the number of syllables per 100 words. The human interest level is estimated by counting the personal sentences and personal words contained in the printed material. According to Flesch (1949), personal sentences are questions, commands, or requests addressed to the reader, sentences set apart by quotation marks, and sentences whose meaning the reader must infer from the article's context. Personal words are first, second, and third person pronouns, except neuter pronouns, and all words that have implied masculine or feminine gender (Flesch, 1949).

After analysis the reading levels of the experimental and control messages were found to be standard and difficult respectively (Figure 6, p. 25). The human interest levels were interesting and dull for the experimental and control messages respectively (Figure 7, p. 26).

Both messages were then analyzed by employing a procedure which is used to evaluate interpretive talks for the presence of Tilden's interpretive principles and active language presented in an interpretive methods course at The Ohio State University (Cherem, 1977a). Evaluation was accomplished by underscoring sentences incorporating active words and phrases, colorful words and phrases, personal words and interpretive principles (Appendix C).

Analysis showed that the experimental message contained 36 pieces of active language which included colorful and active words and phrases and personal words and 2 uses of Tilden's interpretive principles. The control message contained 9 pieces of active language and 1 use of Tilden's interpretive principles.

The second difference between the messages was the speaker's rate of speech. Although both messages were recorded by Mr. Gene Worman, his rate of speech was slower in the experimental message (154 words per minute) than in the control message (230 WPM).

The third and final difference between the messages was in the background accompaniment used. The experimental

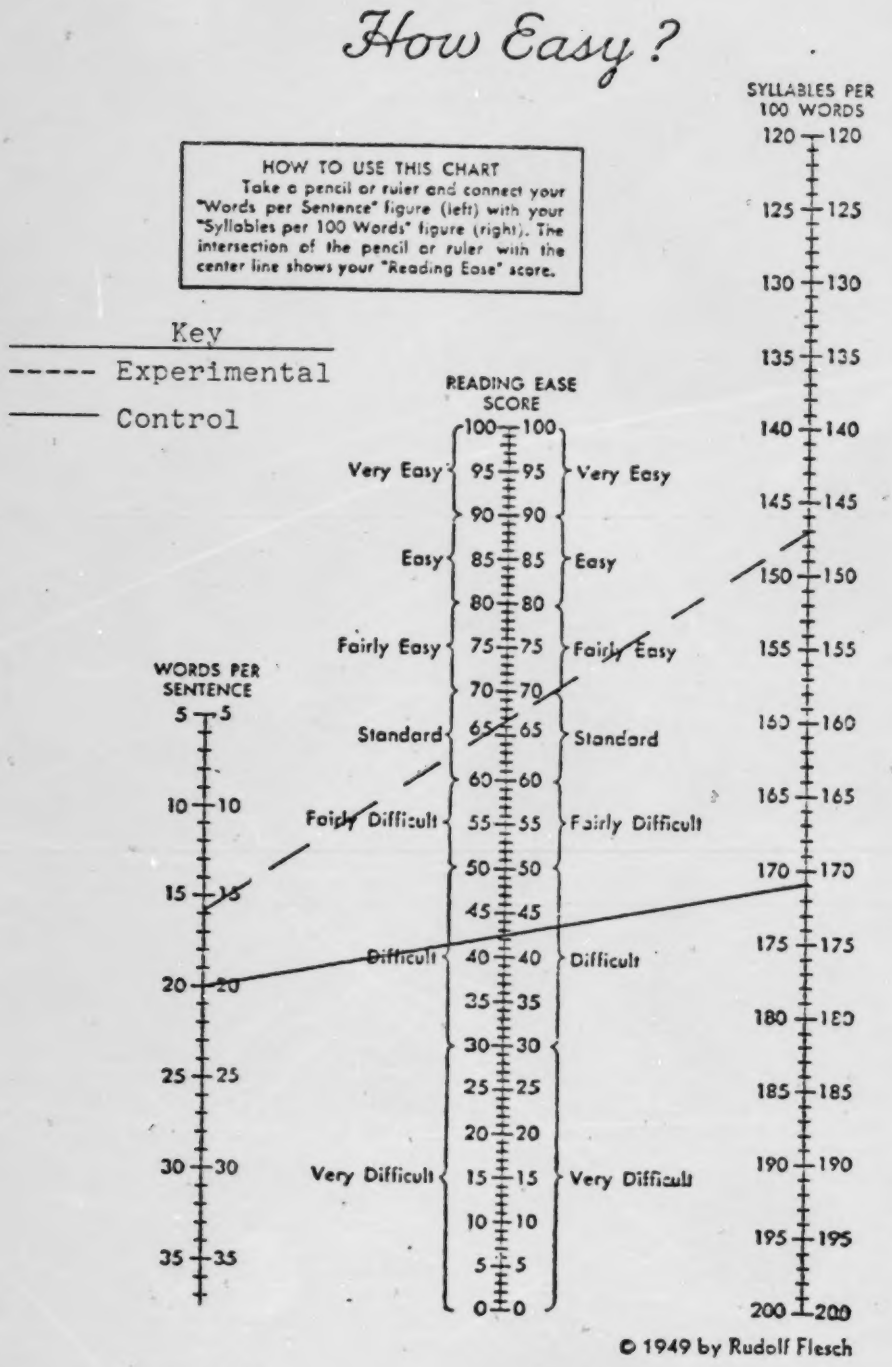
How Easy?
HOW TO USE THIS CHART
Take a pencil or ruler and connect your "Words per Sentence" figure (left) with your "Syllables per 100 Words" figure (right). The intersection of the pencil or ruler with the center line shows your "Reading Ease" score.
Key
Experimental
Control
WORDS PER SENTENCE
READING EASE SCORE
SYLLABLES PER 100 WORDS
Very Easy
Easy
Fairly Easy
Standard
Fairly Difficult
Difficult
Very Difficult
© 1949 by Rudolf Flesch

Figure 6. Reading Ease For Control and Experimental Messages According To Flesch (1949) Scale

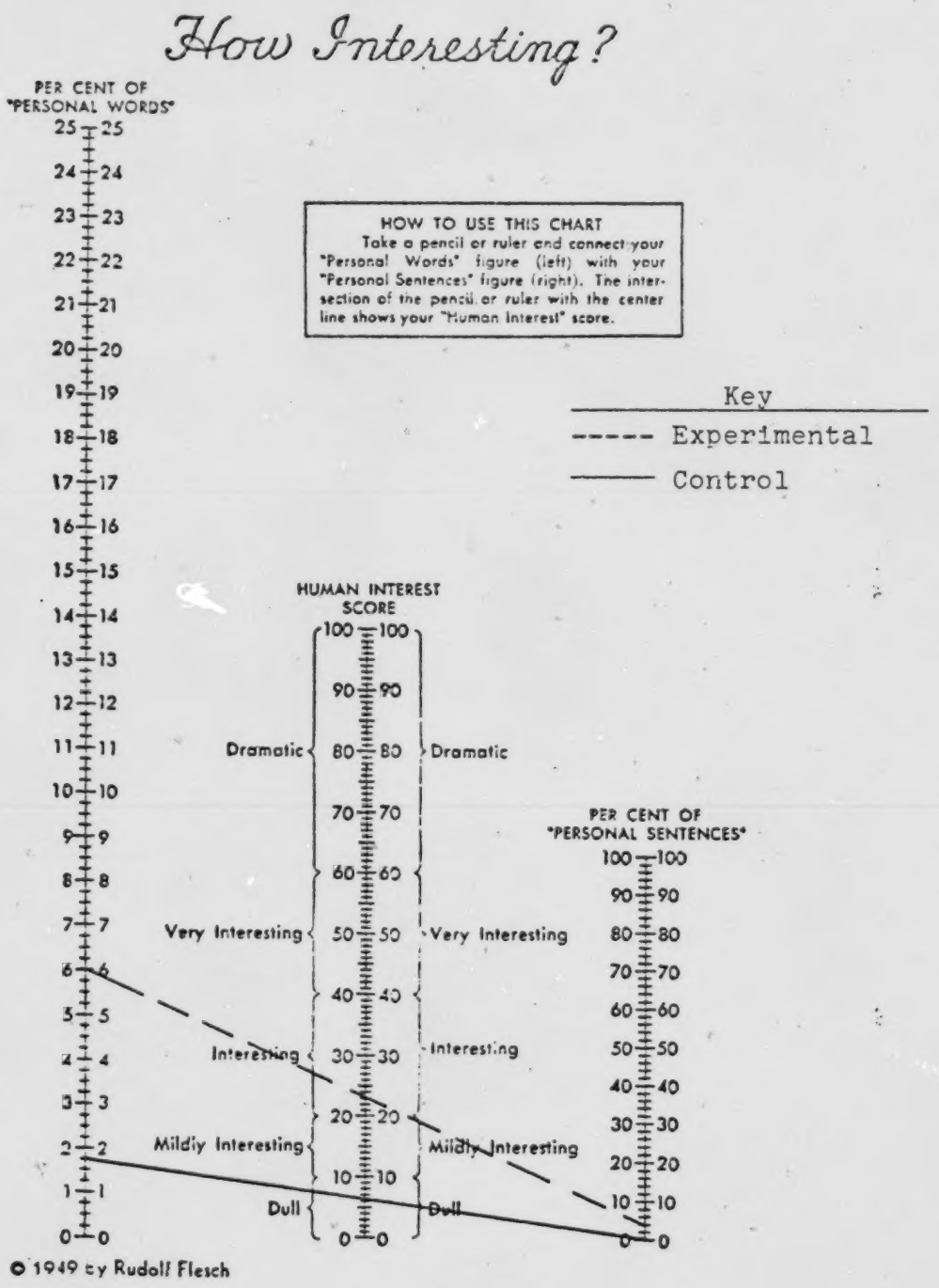
How Interesting?
PER CENT OF "PERSONAL WORDS"
HOW TO USE THIS CHART
Take a pencil or ruler and connect your "Personal Words" figure (left) with your "Personal Sentences" figure (right). The intersection of the pencil or ruler with the center line shows your "Human Interest" score.
Key
Experimental
Control
HUMAN INTEREST SCORE
Dramatic
Very Interesting
Interesting
Mildly Interesting
Dull
PER CENT OF "PERSONAL SENTENCES"
© 1949 by Rudolf Flesch

Figure 7. Human Interest Level For Control and Experimental Messages According To Flesch (1949) Scale

background accompaniment, "Dawn at New Hope, Pa., (on the Environments album produced by Syntonic Research, Inc.) recreated an early morning outdoors environment. The recording's sounds of owls, geese, doves, and insects were used to reflect the forest environment of Adena villages. The control background accompaniment picked up on the Indian theme with sounds of drumming and chanting of modern American Plains Indians. This background was considered inappropriate because there is no evidence to suggest that the Adena had musical instruments which could produce this type of sound[2].

Production costs were calculated for both messages. According to Mr. Gene Worman, the cost to record each message would be $50.00.

Data Collection Methods. Four methods were used in this study to collect data: 1) observation, 2) administration of a questionnaire, 3) an interview, and 4) a sales table.

Observation was used to determine how long the subject listened to the audio message. A stop-watch recorded the time to the nearest second.

A questionnaire was used to determine the subject's immediate information recall and demographic data. The

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[2] According to Dr. Ray Baby, Curator of Archaeology, Ohio Historical Center.

questionnaire was developed with the assistance of Mr. Michael Malone, a statistical consultant in the College of Education, Dr. Gabriel J. Cherem, then Assistant Professor of Natural Resources, and Dr. J. Robert Warmbrod, Professor of Agricultural Education, all of The Ohio State University. Before being administered to the visitors the questionnaire was reviewed and approved by Mr. William Keener and Ms. Martha P. Otto of the Ohio Historical Center.

After the pretest, two changes were made in the questionnaire. The rating scales on which the visitor rated the subject matter, the speaker's voice, the message text, and the background accompaniment, were changed from four to six points. Two questions were added.

The final questionnaire was three pages long and was divided into three parts. Part 1 contained four rating scales numbered 1 (low) to 6 (high) and served as a guideline during the interview. Part 2 consisted of four multiple-choice questions which measured the visitor's immediate information recall. The last page, Part 3, questioned the visitor concerning experience with audio messages, previous visits to the Historical Center, and demographic data (age, sex, occupation, and zip code). A space for additional comments was provided. Both the pretest and final questionnaires are in Appendix D.

An interview was used to determine the visitor's interest in and enjoyment of the audio message. It was decided

to use an interview only after the pretest showed that some visitors were not answering the open-ended questions relating to their ratings given in Part 1 of the questionnaire. Also visitors seemed to be rushing through the questionnaire. It was hoped that asking all the questions contained in Part 1 of the questionnaire orally would encourage him/her to answer more reflectively and more precisely. The interview procedure described below was followed during testing.

First, with clipboard and questionnaire in hand, the visitor was approached and introduced to the study. Then the visitor was asked if s/he would like to answer a few questions concerning the recorded message s/he had just listened to and if s/he would consent to fill-out a brief questionnaire. If the visitor agreed to participate in the study, first, all questions contained in Part 1 of the questionnaire were asked. (In order for the visitor to easily see the rating scales printed on the first page of the questionnaire s/he was positioned to the interviewer's right.) The format which was followed during the interview is found in Appendix E.

Occasionally, a visitor's response to an open-ended question following the rating of the subject matter, speaker's voice, message text, or background accompaniment was vague or unclear. In this case a follow-up question ("What do you mean by that?" or "Could you explain what you mean by _____?") was asked to encourage the visitor to answer more

precisely. For example, one visitor, in response to the question following his rating of the message text, said it was fair. After asking the visitor what he meant by "fair", he said that the text was easy to follow but somewhat boring.

Follow-up questions were also asked if the visitor did not comment on the speaker's rate of speech or the sound level of the background accompaniment. In some cases, the visitor mentioned these two points when asked the reason for their rating. If not, the follow-up questions asked were, "What did you think of the speaker's rate of speech?" or "What did you think of the sound level of the background accompaniment?"

After the final interview question from Part 1 on the questionnaire was answered by the visitor, the questions contained in Parts 2 and 3 of the questionnaire were explained to him or her. The visitor then proceded to fill-out the remainder of the questionnaire.

As a part of the cost-effectiveness analysis of the audio messages, a sales table was set up near the Adena house exhibit during the time of data collection. The table, covered by a cherry red burlap cloth, displayed merchandise relating to the prehistoric Indian cultures. A sign, three-feet by two-feet, with three-inch red letters announcing "Ohio's Prehistoric Indian Sales Table" was hung on the wall behind the table. As items were sold, they were replaced immediately with new stock in order to keep

the inventory displayed the same. The arrangement of items on the table was as similar as possible each day. After each sale, the price of the item sold, the date, the time of day, and the message being tested was recorded by an assistant. Also recorded was whether or not the customer had been included in the study, had heard the audio message, or "none of the above". Merchandise stocked and prices are listed in Table 2, p. 32.

Sampling Procedures

Pretest. The initial pretest was conducted on November 12 from 1 P. M. to 3 P. M., November 13 from 1 P. M. to 3 P. M., and November 14 from 10 A. M. to 12 Noon. The control message was tested on the first two days and the experimental message on the last day. After this pretest, changes in the questionnaire as discussed earlier and the decision to interview visitors were made.

A second pretest was conducted on November 19 (1 P. M. to 3 P. M.), 20 (1 P. M. to 3 P. M.), 21 (10 A. M. to 12 Noon), 25 (1 P. M. to 3 P. M.), 26 (3 P. M. to 5 P. M.), and 27 (10 A. M. to 12 Noon). Changes brought about by this pretest were to increase sampling time from two to four hours each day because of slow visitation and to exclude the 10 A. M. to 12 Noon time block during weekdays because of the overwhelming dominance of school tours.

Sampling times. This study was conducted on December 3

Table 2. List of Items and Their Prices Available For Purchase From Sales Table.

| Items | Prices |
|---|---|
| Books or pamphlets | |
| An Ohio Portrait | $20.00 |
| Adena People #2 | 6.75 |
| Ohio Prehistoric Peoples | 3.50 |
| Fort Hill | 1.00 |
| Fort Ancient | 1.00 |
| Serpent Mound | 1.00 |
| Hopewell Human Bone Whistle | .50 |
| Hopewell Mask Headress | .50 |
| The Hambleton Mound | .50 |
| Papers in Archaeology | .50 |
| Indian Cultures of Ohio | 2.50 |
| Prehistoric Chronology Charts | .35 |
| Artifact Reproductions | |
| Adena Man Pipe | 5.00 |
| Seip Head Pipe | 2.00 |
| Hopewell Duck Pot | 2.00 |
| Otter Pipe | 2.00 |
| Raven Pipe | 2.00 |
| Duck Hawk Pipe | 2.00 |
| Quail Pipe | 2.00 |
| Tube Pipe | 2.00 |
| Variety of Postcards | .10 |

through 23, 1977. No sampling occurred on December 5 because the cassette containing the experimental message had been stolen and time was needed to re-record it. Two two-hour time blocks were chosen each day from among the hours of 1 P. M. to 5 P. M. during weekdays and 10 A. M. to 5 P. M. during weekends. Using a random numbers table (Gay, 1976), the condition (experimental or control message) was assigned to each time block.

Final Data Collection Procedure

Each day the sales table was set up a few minutes before the data collection began. Also, if the experimental message was to be tested, it was inserted in place of the control message which played at all other times. Next, a questionnaire was dated, coded for the experimental or control condition, and attached to the clipborad. The exact minute after the hour at which sampling began was selected randomly.

On those days during which visitation was slow, each visitor who met the target population criteria was sampled. If two people approached the exhibit together, a coin toss determined who would be chosen. On heavier visitation days, visitor sampling was determined by selecting numbers one through six from a random numbers table. For example, if the first number was five, the fifth visitor who met the sampling criteria was interviewed.

As the chosen visitor left the exhibit area after hearing the message, s/he was approached and interviewed. After the visitor had returned the questionnaire, the next visitor was selected.

Of the 99 people approached and asked to participate in the study, 8 refused. That the visitor didn't pay attention to the recorded message at all or didn't want to take the time were the only reasons given for not wanting to take part in the study.

Analysis of Data

The first 45 questionnaires collected from each condition (the experimental or control conditions) supplied data analyzed in this study. After coding, the data were punched on computer cards and analyzed using the Statistical Package for the Social Sciences (Nie, et al., 1975) and Statistical Analysis System.

All questions asked the visitor during the interview or on the questionnaire, except for the open-ended questions, were analyzed by Student's t-test and Chi-square analysis. The level of probability for both tests of significance was set at 5%.

Categorization of Open-Ended Question Responses.

During the interview, after each rating response, the visitor was asked to express his reason for that rating. Follow-up questions concerning the speaker's rate of speech

and sound level of the background accompaniment were also asked some visitors who did not comment on these aspects of the audio message specifically. All responses were later categorized and analyzed. The results of the analysis were stated in the form of percentages.

The categories for each question were established by first listing all word(s) or phrase(s) that expressed a particular opinion. Using Deese's (1965) The Structure of Association in Language and Thought and Webster's (1976) Collegiate Thesaurus, these words and phrases were put into narrow categories. Then broader categories were formed by combining related categories.

The responses were categorized and assigned a numerical value: 1 or 2. If the entire response given by the visitor fit into one category it was assigned 2 points. If the entire response could be divided into two categories, it was assigned 1 point for each category. With this method each response carried the same weight: a total of 2 points.

It is important to remember that responses in each category may be a visitor's entire response or part of a response. Therefore, it cannot be said, for example, that 10 percent of the 90 visitors (or 45 for each condition) responded in the way reflected by the category.

Null Hypotheses. The hypotheses stated earlier were transformed into the following null hypothese for the

purposes of analysis:

1. There is no statistically significant difference between the effect of audio messages composed using interpretive technique and the effect of audio messages composed without using interpretive technique on the visitor's interest and enjoyment.
2. There is no statistically significant difference between the effect of audio messages composed using interpretive technique and the effect of audio messages composed without using interpretive technique on the visitor's immediate information recall.
3. There is no statistically significant difference between the effect of audio messages composed using interpretive technique and the effect of audio messages composed without using interpretive technique on the cost effectiveness of the message.

# CHAPTER 5

## RESULTS AND DISCUSSION

The results described in this chapter were obtained by analyzing the data from ninety questionnaires. For both the experimental and control conditions, forty-five questionnaires were collected over a three-week period. The same number was collected during the weekday (Monday through Friday) and weekend (Saturday and Sunday) periods (Table 3).

Table 3. Number of Questionnaires Collected

| | Condition | |
|---|---|---|
| | Experimental | Control |
| Weekend | 24 | 24 |
| Weekday | 21 | 21 |
| Total | 45 | 45 |

## Visitor Characteristics

### Sex

In this study, there was no statistically significant difference between the numbers of males and females in each condition (Table 4, Appendix F). Fifty-seven percent of the visitors interviewed were males and forty-three percent were females.

### Ages

Most of the visitors, 40 percent, were between the ages of 20 and 26. Visitors in the 27 to 36 age category (23 percent) and 13 to 19 age category (14 percent) made up the second and third largest groups. The composition of visitors by age between the two conditions was significantly different (Table 5, Appendix F). Twenty-four percent of the control audience was teenagers. Only 4 percent of the experimental audience was 13 to 19 years old. This difference may have been caused by an unusually large number of teenage visitors at the Historical Center during one or two days when the control message was being tested.

### Occupations

Visitor occupations were categorized according to those categories used in Occupations and Social Status (Reiss, 1961). Most of the visitors were students, which is reflected in the age categories previously described. This could be attributed to the fact that many students were on Christmas

holiday during the sampling period (Figure 8, p. 40).

Zip Codes

Of the ninety people included in this study, 85 were from Ohio. Other states represented were Virginia (2), New York (1), California (1), and Iowa (1).

A majority of the Ohioans were from Columbus (44) or within 20 miles of the Ohio Historical Center; Worthington (4), Georgesville (2), Reynoldsburg (1), Westerville (1), Shawnee Hills (1), Canal Winchester (1), and Galena (1). The remaining visitors were from Canton (4), Athens (3), Mansfield (3), Toledo (3), Dayton (2), London (2), Youngstown (2), Akron (1), Chillicothe (1), Cincinnati (1), Cleveland (1), and Springfield (1).

Frequency of visits to the Ohio Historical Center

Most of the people participating in the study, 65 percent, were visiting the museum for the first time in the last twelve months. For 89 percent of the visitors sampled, this was their first or second visit within twelve months (Figure 9, p. 41).

Interest and Enjoyment Ratings

During the interview, visitors were asked to rate the subject matter, speaker's voice, message text, and background accompaniment on scales from one (low) to six (high). The ratings were analyzed according to the condition, the

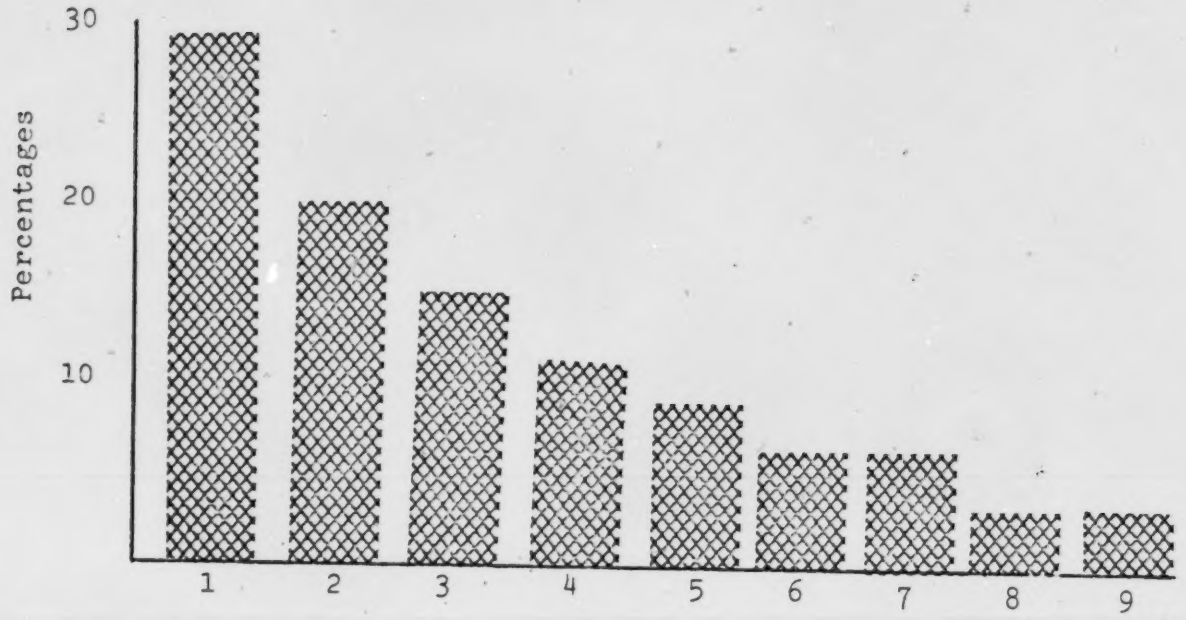


Figure 8. Occupational Categories of Visitors By Percentage

Key To Figure 8.

| | | | |
|---|---|---|---|
| 1 | Student | 5 | Craftsmen |
| 2 | Professional Technical | 6 | Operatives |
| | | 7 | Service Workers |
| 3 | Housewife Mother | 8 | Managers; Officials |
| 4 | Sales; Clerical | 9 | Other (Self-employed) |

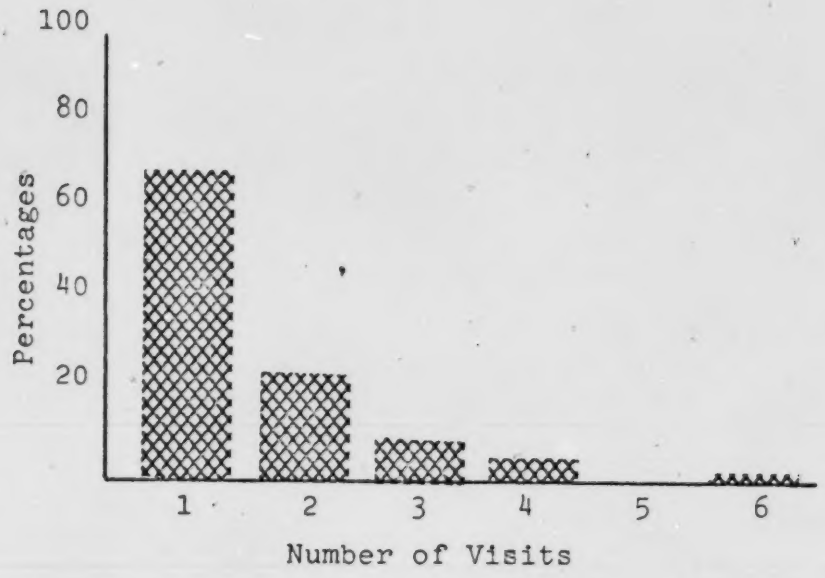


Figure 9. Frequency of Visits by Visitors

visitor's sex, and the visitor's age. If the number indicated on the scale was 5 or 6, the rating was considered to be 'very interesting' or 'very enjoyable'. A rating of 1 or 2 was considered to be 'not at all interesting' or 'not at all enjoyable'.

Question 1.

Please rate the subject matter (Adena Indian culture) presented in the message.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL INTERESTING | | | | | VERY INTERESTING |

The results of a t-test analysis indicated no statistically significant difference between the mean ratings of the two conditions (Table 6, p. 43). The average ratings were 5.00 and 4.78 for the experimental and control messages respectively. Figure 10 (p. 43) shows the relationship between the subject matter ratings given for the experimental and control ratings. Seventy-six percent of the visitors hearing the experimental message rated the subject matter 'very interesting'. The subject matter of the control message was rated 'very interesting' by 65 percent of the visitors.

Based on the visitors' ratings, the use of interpretive technique as a guide to compose the experimental message did not significantly affect the visitor's interest in the subject.

Table 6. T-test Results For Ratings of Subject Level Of Interest

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\bar{X}$ | 5.00 | 4.78 |
| SD | 1.00 | 1.09 |

t = 1.009

df = 88

p = 0.3151

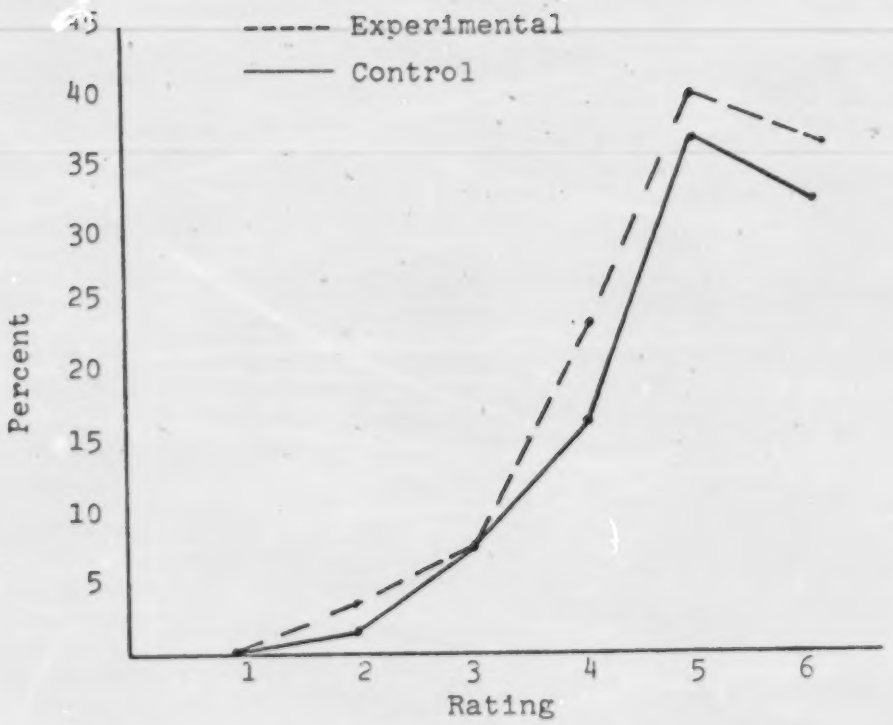


Figure 10. Relationship Of Ratings For Subject level Of Interest By Condition

There was no significant difference between the visitor's sex and the rating given by the visitor (Table 7, Appendix F).

A statistically significant difference between the visitor's age and interest rating at the .05 probability level was also not evident. However, if a .10 probability level had been used in this study, there would be a significant difference (Table 8, Appendix F). In this case, Chi-square analysis indicated that the 20 to 26 year age group rated the subject matter less interesting than the other age groups.

Visitors' responses to the question, "What is your reason for the above rating?"

The relative frequencies of the visitors' responses to this question indicated that the visitors' ratings for the control and experimental messages, although statistically equivalent, were given for different reasons for each condition (Table 9, p. 45 ).

The percentage of responses indicating that the visitor found the message 'interesting' was nearly equal (36 percent for the experimental message and 35 percent for the control message). Fifteen percent of the responses by visitors hearing the control message and 10 percent of the responses by visitors hearing the experimental message were classified as 'not interesting'. These categories pertaining to the subject matter of the messages accounted for 46

Table 9. Categories Of Responses To Open-Ended Question Concerning Subject Matter Rating: Frequencies Of Responses and Positive Or Negative Classication

| Category | Condition | | Classified Positive; Negative |
|---|---|---|---|
| | Experimental | Control | |
| Interesting | 36% | 35% | Positive |
| Not Interesting | 10% | 15% | Negative |
| Informative or Provided Desired Information | 18% | 17% | Positive |
| Lacked Desired Or Expected Information | 9% | 15% | Negative |
| Miscellaneous Positive Responses | 20% | 8% | Positive |
| Miscellaneous Negative Responses | 8% | 10% | Negative |

percent (experimental message) and 50 percent (control message) of the visitors' responses. Because the word 'interest' was used when asking the visitor to rate the message, a response using 'interest' may have been cued.

That the message was informative or provided information that the visitor desired was also a common reason for the given rating. The relative frequencies of these responses for the experimental and control conditions were 18 percent and 17 percent. Visitors occasionally said that the message lacked information that they desired or expected. Most wanted or expected it to discuss the Adena Indian house itself, especially construction techniques, rather than other aspects of Indian culture. Others thought that the messages contained too much "commonly known" information and they desired new facts. For the control message, 15 percent of the responses were classified in this category and 9 percent of the visitors' responses from the experimental message were classified in this category.

All other responses or parts of responses were classified as 'miscellaneous positive' or 'miscellaneous negative'. Of the positive miscellaneous responses in the experimental condition, most were related to the comparison of prehistoric culture to modern culture or to the use of personal words or phrases. One visitor said that the control message "expressed the feeling and life of the Indians". That the control message was short, held the visitor's attention, and

was "good" were other comments expressed by visitors. The percentage of positive miscellaneous comments for the experimental message (20%) was considerably greater than the percentage of positive miscellaneous comments for the control message (8%). This may indicate that the visitor did find the experimental message more interesting to listen to because of the use of interpretive technique (relate principle and personal words and phrases), but that the rating scale which attempted to measure visitor interest was not valid.

Miscellaneous negative responses for each condition were similar. These included "rushed", "too long", or "poor quality in general" and were expressed in both conditions. One visitor questioned the facts presented in the control message.

Visitors may not have been able to express how interesting they found the subject of the messages on a scale from 1 to 6. However, after classifying each category as positive or negative and determining the frequencies of positive and negative responses by condition and by rating, there was an indication that the experimental message was more favorably recieved than the control message. Visitors expressed more positive comments overall for the experimental message (73 percent) than for the control message (60 percent) (Figure 11, p. 48).

Although the number of positive responses decreased

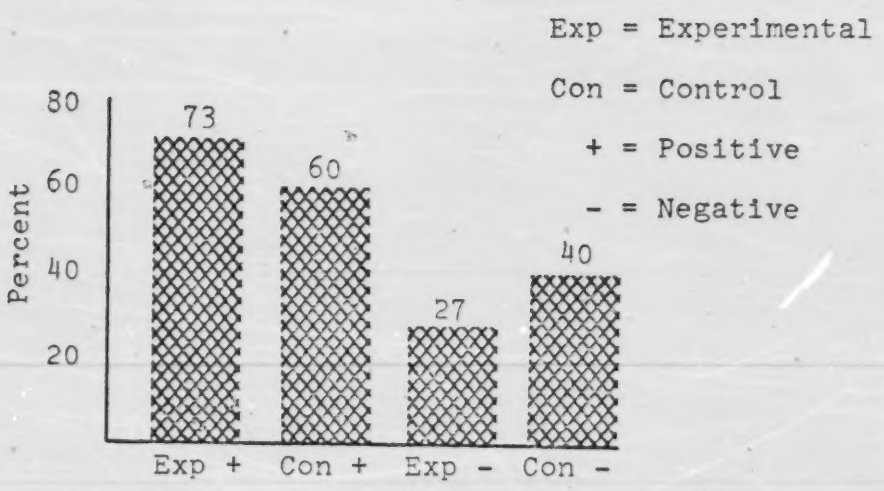


Figure 11. Positive and Negative Classifications Of Open-Ended Response Categories For Subject Matter Question

as the rating decreased for both messages, the percentage of experimental positive comments was greater than the percentage of control positive comments for all ratings except the lowest (1 or 2). For a rating of 'very interesting' 87 percent and 82 percent of the experimental and control responses were classified as positive. There were more positive responses in the experimental condition (35 percent) than in the control condition (25 percent) for a rating of 3 or 4. All responses in each condition were negative if the rating was a 2 (Figures 12 and 13, p. 50). No one rated the subject matter 1 in either condition.

Question 2.

Do you feel that the speaker's voice was:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

For this question, the results of a t-test indicated no statistically significant difference between the mean ratings for each condition (Table 10, p. 51). The average rating for the experimental message (5.11) was only very slightly greater than the average rating for the control message (4.82). This is not surprising because the most noticeable difference in the speaker's voice for each message was the speed at which he talked (154 WPM for the experimental message and 230 WPM for the control message). The standard deviation of the control message was slightly

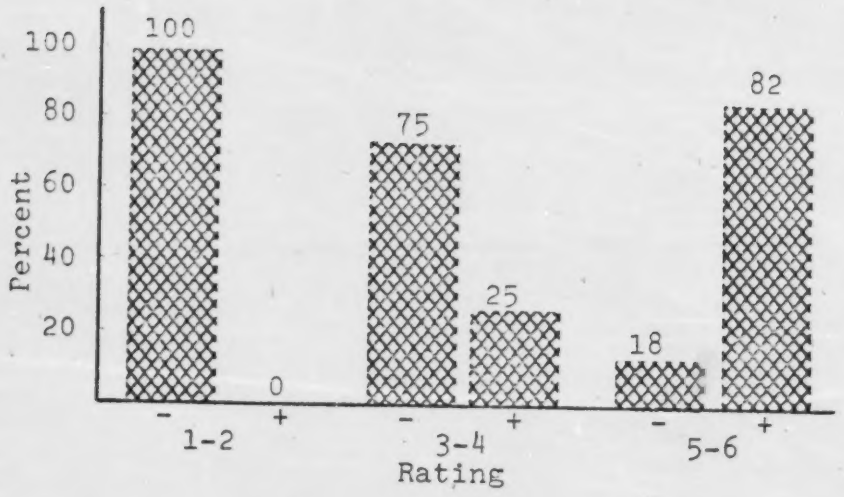


Figure 12. Positive and Negative Classifications Of Open-Ended Response Categories For Subject Matter Of Control Message By Ratings

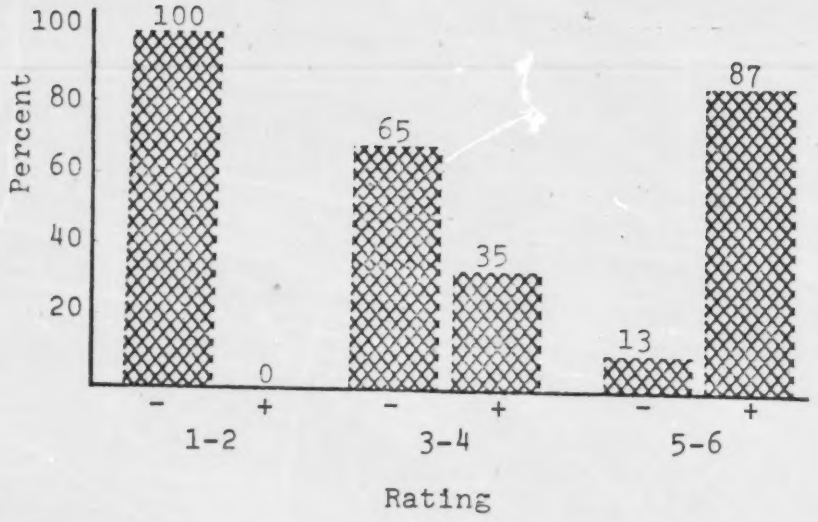


Figure 13. Positive and Negative Classifications Of Open-Ended Response Categories For Subject Matter Of Experimental Message By Ratings

Table 10. T-test Results For Ratings Of The Enjoyment Level Of The Speaker's Voice

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\bar{X}$ | 5.11 | 4.82 |
| SD | 1.05 | 1.32 |

t = 1.150

df = 88

p = 0.2534

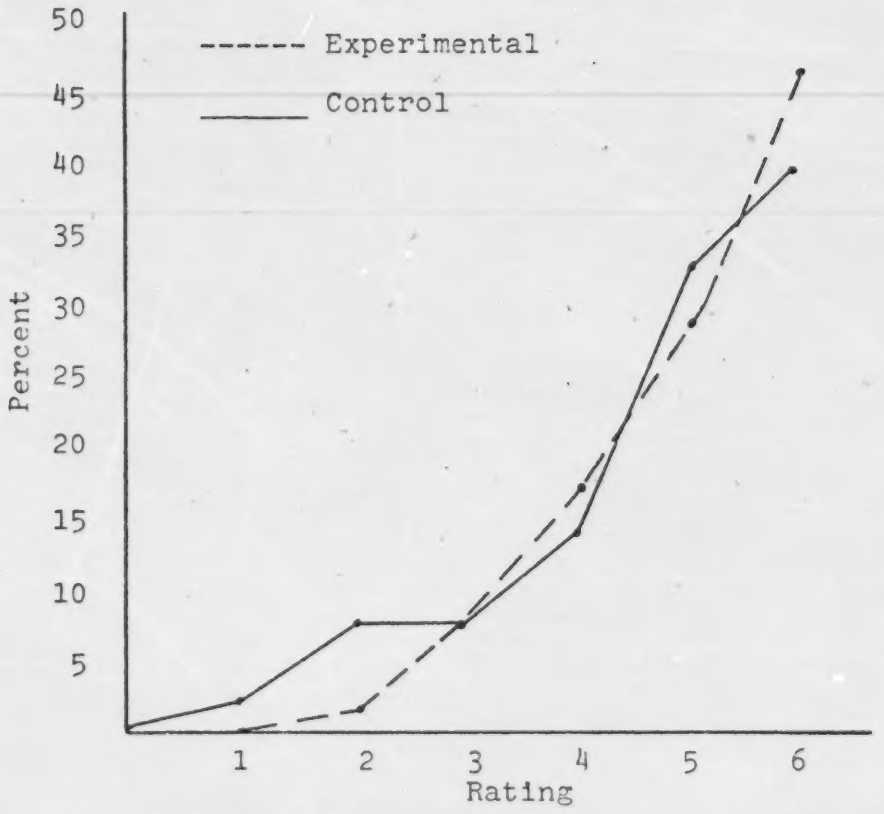


Figure 14. Relationship Of Ratings For Speaker's Voice By Condition

greater than the standard deviation of the experimental message. This indicated that there was more discrepancy among ratings for the control than experimental message. The frequencies of ratings by conditions reflected this difference (Figure 14, p. 51). A rating of 'very enjoyable' was given by 76 percent and 71 percent of the visitors hearing the experimental and control messages respectively. At the other end of the scale (1 or 2), ratings were given by 2 percent (experimental) and 9 percent (control) of the visitors interviewed.

No statistically significant difference was discovered by Chi-square analysis between the visitor's sex and the rating given (Table 11, Appendix F).

There was no statistically significant difference at the .05 probability level between the visitor's age and the rating given for this question (Table 12, Appendix F). However, as for question 1, if a .10 level of probability was used, a significant difference would have been found. For the speaker's voice, Chi-square analysis showed that teenagers' ratings were lower and the ratings of visitors aged 47 to 56 were higher than those ratings of other age groups.

Visitors' responses to the question, "What is your reason for the above rating?"

The relative frequencies of the categorized responses were very similar for both messages in all categories ex-

except the two relating to the speed of speech (Table 13, p. 54). For the control message, 65 percent of the responses relating to the speaker's rate of speech only indicated that it was too fast. Only 3 percent of the experimental message responses in the rate of speech categories fell into the 'too fast' category. Evidently, the visitors interviewed did feel that the speaker talked too rapidly even though it was not reflected in the average ratings. This is another clue which indicates that the rating scales were not measuring what they were designed to measure.

Because many more experimental responses were categorized as 'speed of speech good' (a positive category), the percentage of positive responses by conditions was greater for the experimental message than for the control message (Figure 15, p. 55). Eighty-one percent of the experimental responses were classified as positive. Of the control responses, only 66 percent were classified as positive.

Figures 16 and 17 (p. 56) indicated that visitors rating the speaker's voice in the control message 'not at all enjoyable' (1 or 2) occasionally gave responses which were classified as positive. In the experimental message, all responses from visitors rating the speaker's voice 1 or 2 were classified as negative. At the opposite end of the scale (5 or 6), more responses concerning the experimental message voice were classified as positive (95 percent) than responses concerning the control message voice (80 percent).

Table 13. Categories Of Responses To Open-Ended Question Concerning The Visitor's Rating Of The Speaker's Voice: Frequencies Of Responses and Positive Or Negative Classification

| Category | Condition Experimental | Control | Classified Positive; Negative |
|---|---|---|---|
| Relating to Clarity Of Speech | 12% | 12% | Positive |
| Relating to Lack Of Speech Clarity | 0% | 0% | Negative |
| Relating to Good Message Delivery | 23% | 20% | Positive |
| Relating to Poor Message Delivery | 7% | 7% | Negative |
| Typical Voice As Found On Taped Messages | 11% | 10% | Negative |
| Speed Of Speech Good | 45% | 33% | Positive |
| Speed Of Speech Too Fast | 1% | 18% | Negative |

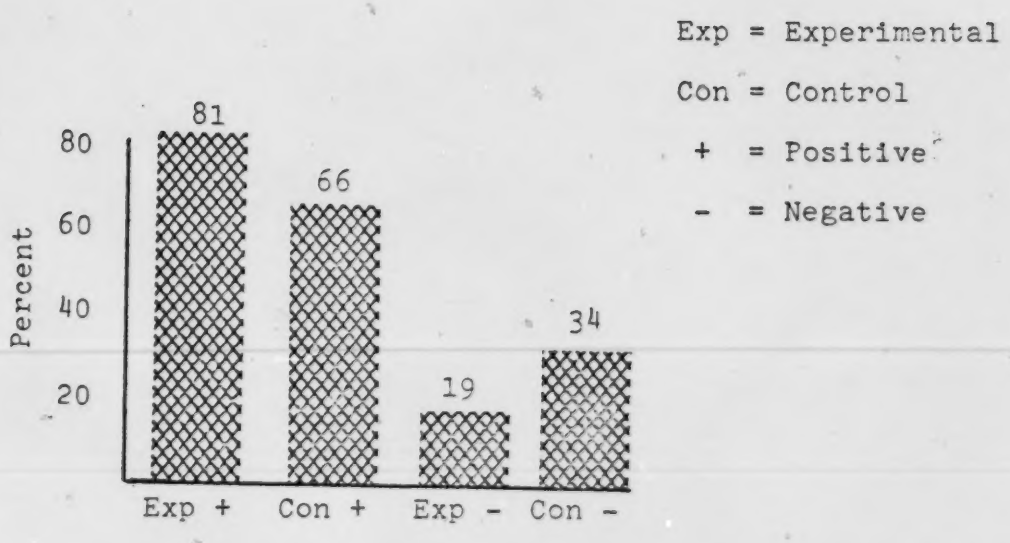


Figure 15. Positive and Negative Classifications Of Open-Ended Response Categories For Speaker's Voice Question

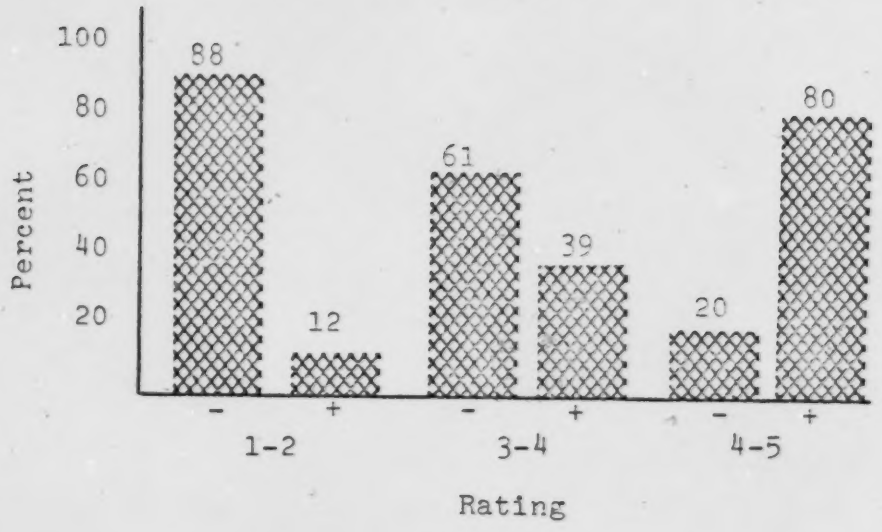


Figure 16. Positive and Negative Classifications Of Open-Ended Response Categories For Speaker's Voice In Control Message By Ratings

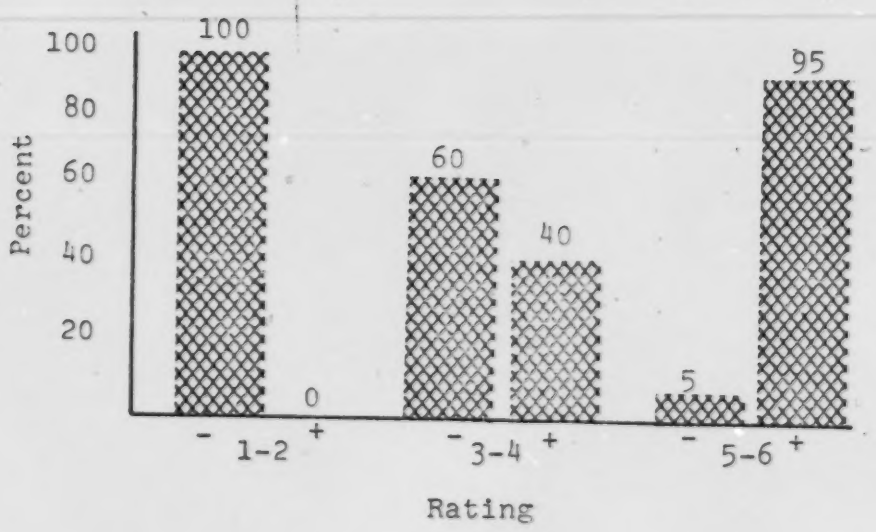


Figure 17. Positive and Negative Classifications Of Open-Ended Response Categories For Speaker's Voice In Experimental Message By Ratings

Question 3.

Do you feel the words the speaker used were:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

The results of analysis of the average ratings by a t-test indicated no statistically significant difference between the two audio messages (Table 14, p. 58). For the control message, the average rating was 5.00 compared to the average rating for the experimental message (5.14).

Also, the percentages of visitors in each condition rating the words of the message 'very enjoyable' were almost identical, 75 percent for the control and 76 percent for the experimental (Figure 18, p. 58 ).

Based on the analysis of data from the rating scales, no statistically significant effect on visitor enjoyment of the message text due to the use of interpretive technique was demonstrated.

Again, there was no statistically significant difference between the visitor's sex and the rating of the message text (Table 15, Appendix F).

For this question there was a statistically significant difference at the .05 probability level between the visitor's age and rating (Table 16, Appendix F). Chi-square analysis indicated that visitors in the 20 to 26 year age category rated the message text lower than visitors in other

Table 14. T-test Results For Ratings of Message Text

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\bar{X}$ | 5.14 | 5.00 |
| SD | 1.00 | 1.08 |

t = 0.701

df = 87

p = 0.4850

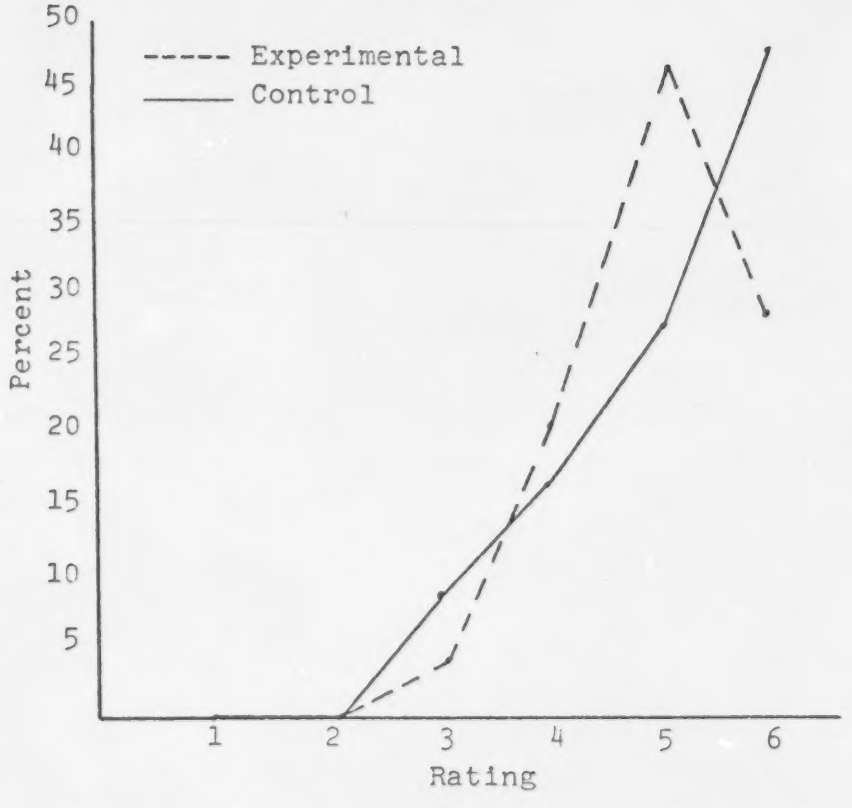


Figure 18. Relationship Of Ratings For Message Text

age categories.

Visitors' responses to the question, "What is your reason for the above rating?"

The frequencies of the categorized responses indicated that the visitors did notice a difference in the message texts even though the ratings did not reflect it (Table 17, p. 60). These results suggest that the rating scales used to measure the visitor's enjoyment of the message text were invalid.

A greater percentage of responses for the experimental message (49 percent) than the control message (32 percent) were classified under the category 'clear or simple text'. The opposite category, 'text advanced', contained more control responses (10 percent) than experimental responses (1 percent). The results of the Flesch (1949) scale analysis for message text reading ease support these findings.

Another common response was that the message was "typical of museum tape recordings". Apparently the use of interpretive technique improved the text of the experimental message. Only 8 percent of the responses in the experimental condition fit the category 'typical museum tape', whereas 25 percent of the control responses did.

The percentages of responses classified as 'miscellaneous positive' were almost equal in each condition. However, the responses, although all classified as 'miscellaneous

Table 17. Categories Of Responses To Open-Ended Question Concerning Visitor's Rating Of The Message Text: Frequencies Of Responses and Positive Or Negative Classification

| Category | Condition | | Classified Positive; Negative |
|---|---|---|---|
| | Experimental | Control | |
| Clear Or Simple Text | 49% | 32% | Positive |
| Text Advanced | 1% | 10% | Negative |
| Typical Museum Tape | 8% | 25% | Negative |
| Miscellaneous Positive Responses | 21% | 18% | Positive |
| Miscellaneous Negative Responses | 7% | 15% | Negative |
| Relate Principle | 14% | 0% | Positive |

positive, were somewhat different. Most of the control responses indicated that the visitor noticed that the message was "detailed", "concise", "brief", and organized from beginning (i.e., house) to ending (i.e., death). The experimental message responses were more diverse. Some were emotional, such as "enjoyable", "relaxing", and "keeps people from getting bored". Others reflect the use of interpretive technique: "the use of firsts throughout the tape" and "story of life".

The 'miscellaneous negative' responses for the control message included "too long", "impersonal", "textbooky" and "needs originality". For the experimental message, the responses classified as 'miscellaneous negative' were "too short", "lacks detail", "old information", and "reading rather than listening vocabulary used". The percentages of visitor responses classified as 'miscellaneous negative' (15 percent for the control and 7 percent for the experimental message) tend to support the positive effect of interpretive technique on the experimental message.

Tilden (1967) states that if the interpretive message does not somehow touch the life of the visitor "you have lost his (the visitor's) interest". In the experimental message aspects of Adena culture were related to the everyday life of the museum visitor and it appears that at least some of the visitors hearing the experimental message noticed. The final category, 'relate principle', included 14 percent

of all responses from the experimental condition.

The analysis of responses classified as positive and negative by condition and by rating indicated a difference between the experimental and control messages which had not been discovered by analysis of visitor ratings. Responses in positive categories were greater by percentage in the experimental condition than in the control condition (84 percent and 50 percent respectively) (Figure 19, p. 63).

For a rating of 'very enjoyable', 97 percent of the categorized responses were positive in the experimental condition (Figure 20, p.64). In the control condition, only 60 percent of the responses were positive (Figure 21, p. 64 ). The percentage of positive responses for a rating of 3 or 4 was considerably greater for the experimental message (45 percent) than for the control message (18 percent).

Based on the results of the analysis of visitor responses to this open-ended question, interpretive technique seems to have positively affected the visitor's enjoyment of the experimental message text.

Question 4.

Do you feel the background accompaniment was:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

For this question the results of a t-test showed no statistically significant difference between the control and experimental messages (Table 18). The average ratings

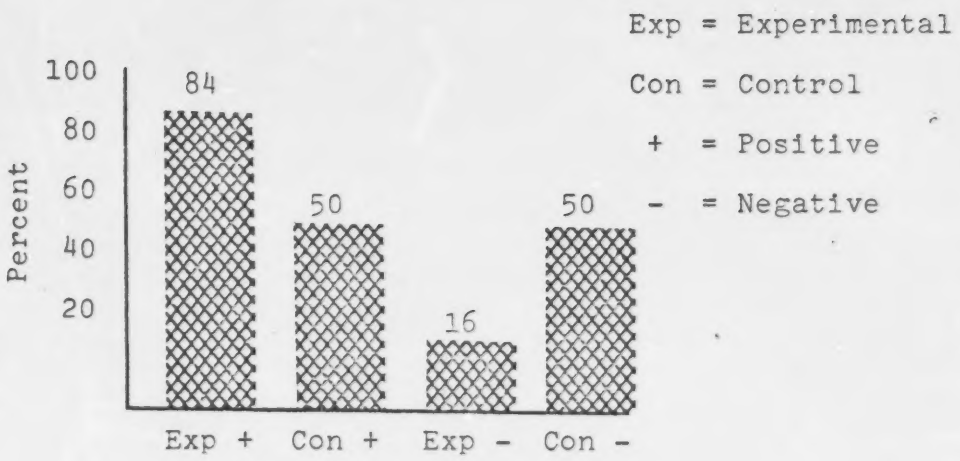


Figure 19. Positive and Negative Classifications Of Open-Ended Response Categories For Message Text Question

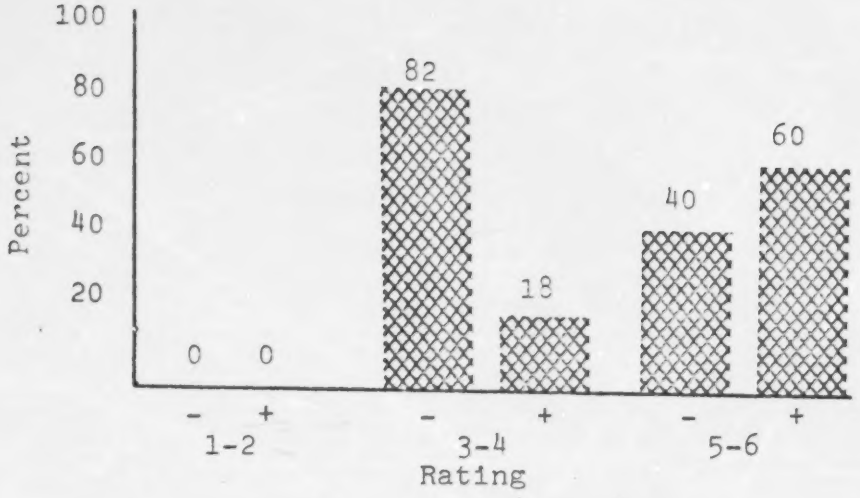


Figure 20. Positive and Negative Classifications Of Open-Ended Response Categories For Control Message Text By Ratings

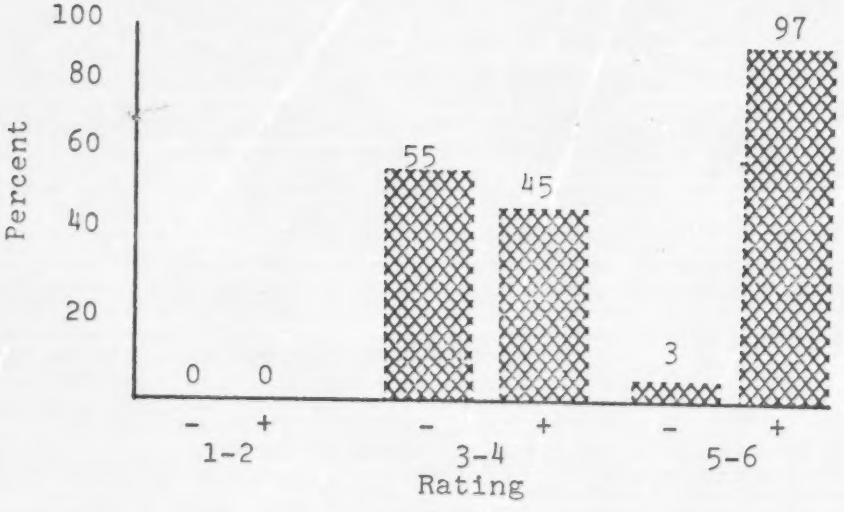


Figure 21. Positive and Negative Classifications Of Open-Ended Response Categories For Experimental Message Text By Ratings

Table 18. T-test Results For Ratings of Background Accompaniment

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\bar{X}$ | 4.79 | 4.38 |
| SD | 1.36 | 1.66 |

t = 1.277

df = 86

p = 0.2050

Figure 22. Relationship Of Ratings For Background Accompaniment By Condition

were 4.38 and 4.79 for the control and experimental messages respectively. The slightly larger standard deviation for the control message indicated that visitors' ratings were more diverse for it than for the experimental message. This is reflected in the relationships of the percentages of ratings given for the background accompaniment in each condition (Figure 22, p. 65 ). For the control message, 49 percent of the visitors rated it 5 or 6, 32 percent, 3 or 4, and 18 percent, 1 or 2. For the experimental message the percentages were 63 percent (5 or 6), 28 percent (3 or 4), and 9 percent (1 or 2).

No significant difference between the visitor's sex and the visitor's rating was discovered (Table 19, Appendix F).

Also, no statistically significant difference between the visitor's age and the rating given for the background accompaniment was found (Table 20, Appendix F).

Visitors' responses to the question. "What is your reason for the above rating?"

Except for the categories 'miscellaneous positive' and 'miscellaneous negative', the percent responses by category between the two messages were similar (Table 21, p. 67 ). Twenty-seven percent and 23 percent of the responses from the control and experimental messages respectively were classified as 'appropriate background'. Only 8 percent from the control and 5 percent from the experimental message

Table 21. Categories Of Responses To Open-Ended Question Concerning Visitor's Rating Of Background Accompaniment: Frequencies Of Responses and Positive and Negative Classification

| Category | Condition Experimental | Control | Classified Positive; Negative |
|---|---|---|---|
| Appropriate Background | 23% | 27% | Positive |
| Inappropriate Background | 5% | 8% | Negative |
| Sound Level Good | 34% | 29% | Positive |
| Sound Level Loud | 9% | 9% | Negative |
| Miscellaneous Positive Responses | 16% | 7% | Positive |
| Miscellaneous Negative Responses | 13% | 21% | Negative |

were classified as 'inappropriate background'. However, considering only the responses classified as 'inappropriate background' from both messages, 64 percent were from visitors hearing the control message.

The sound level of the background accompaniment for both messages was thought to be somewhat too loud[3]. Evidently the visitors didn't think so. Only 9 percent of the responses in each condition were categorized as 'sound level loud'.

The 'miscellaneous positive' responses from the control condition (7 percent) included "good", "interesting", "attracts attention". Negative comments (21 percent) included "not necessary", "immaterial", distracting", "ridiculous", and "annoying". For the experimental message, the 'miscellaneous positive' responses (16 percent) included a few "attracts attention" as well as "subtle", "peaceful", and "not intrusive". The negative comments (13 percent) seemed to be less harsh than those for the control message and included "neutral", "average", "sounds unnatural" and "have heard better". The relative frequencies of visitor responses in these two categories tend to support the nature sounds background accompaniment used in the experimental message.

The open-ended question responses, when classified as either positive or negative, also indicated that visitors enjoyed the experimental background accompaniment more than

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[3]According to Mr. Chris Duckworth, Ohio Historical Center.

the control background accompaniment. Seventy-three percent of the experimental responses and 62 percent of the control responses were classified as positive (Figure 23).

For a rating of 5 or 6, a greater percentage of responses in the control condition (93 percent) than in the experimental condition (83 percent) was classified as positive. However, visitors who rated the experimental background accompaniment 'average' (3 or 4) supported their ratings with many more positive comments (73 percent) than visitors who rated the control background accompaniment 'average' (40 percent) (Figures 24 and 25, p. 70 ).

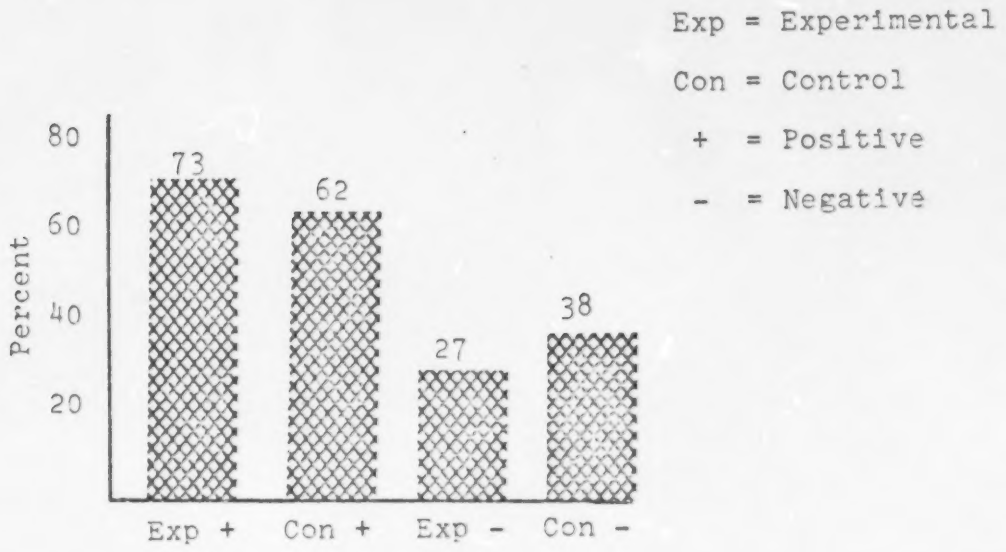


Figure 23. Positive and Negative Classifications of Open-Ended Response Categories For Background Accompaniment Question

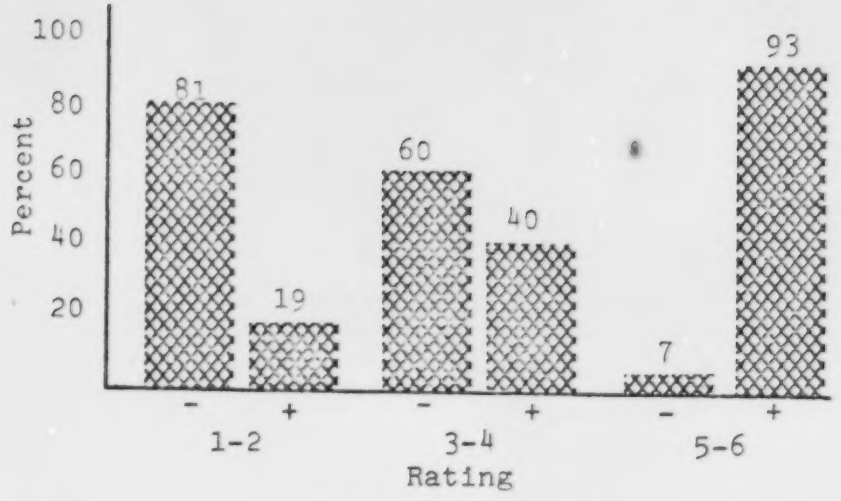


Figure 24. Positive and Negative Classifications Of Open-Ended Response Categories For Control Background Accompaniment By Ratings

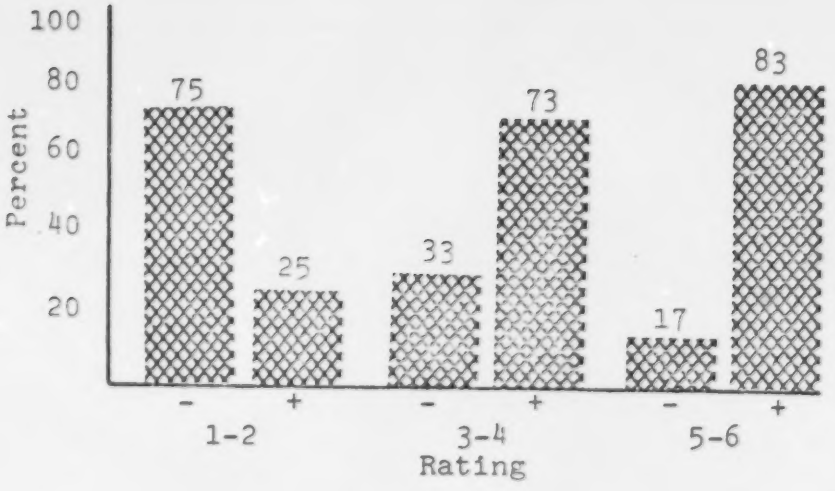


Figure 25. Positive and Negative Classifications Of Open-Ended Response Categories For Experimental Background Accompaniment By Ratings

Immediate Information Recall Questions

Part 2 of the questionnaire contained four multiple-choice questions used to test the visitor's immediate information recall of the subject matter presented in the message. Each question was analyzed according to condition, experimental or control message, by scoring a response as correct or incorrect.

Question 5.

Besides pumpkins and squash, the Adena also cultivated

a. ____sunflowers which provided edible seeds.
b. ____corn which was ground into flour.
c. ____a variety of beans.
d. ____I don't know.

The correct response for this question was 'a', "sunflowers which provided edible seeds". A Chi-square analysis indicated a statistically significant difference among the answers for the two conditions (Table 22, Appendix F). In the control condition, 78 percent of the visitors selected the correct answer. Only 44 percent of the visitors in the experimental condition scored correctly. The most frequently selected incorrect answer in both conditions was 'b', "corn which was ground into flour".

A possible cause for the higher number of correct answers in the control condition was discovered by examining the message texts. In the control message the cultivation of sunflowers was stated in one sentence and the edible seeds which were provided by the sunflower plants was stated

in another. Also the control text stated clearly that "there is no indication that the Adena grew corn". The experimental message text did not indicate directly that the Adena grew sunflower seeds for food. It stated that "the Adena munched on the seeds of sunflowers . . . nurtured to a ripe, nutritious stage". Although the paragraph containing this sentence discussed plants the Indians raised, it may have been too weak or vague to leave the visitor with this specific bit of information.

Question 6.

The Adena Indians probably used gourds

a. ____as a food source.
b. ____as containers.
c. ____as house decorations.
d. ____I don't know.

The correct answer was 'b', "as containers". A Chi-square analysis indicated no statistically significant difference between the control and experimental messages (Table 23, Appendix F). Seventy-one percent of the visitors hearing the control message scored correctly. In the experimental message, 69 percent of the visitors selected the correct response.

For this question, the use of interpretive technique had no effect upon the visitors' immediate recall of the subject matter presented in the experimental message.

Question 7.

Adena pottery is the earliest known type of _____ pottery

found in the Ohio Valley.

a. ____wooden
b. ____ceramic
c. ____stone
d. ____I don't know.

For this question, 'b', "ceramic", was the correct response. No statistically significant was found among the answers for the two conditions (Table 24, Appendix F). Visitors in the control condition selected the correct answer 82 percent of the time. Eighty-seven percent of the visitors in the experimental condition responded correctly.

Again, there was no statistically significant effect of interpretive technique on the visitor's immediate information recall of the subject matter presented in the experimental message.

Question 8.

Occasionally the Adena buried individuals who had died in the dirt floor of a house. These houses were then

a. ___left standing.
b. ___torn down so the materials could be used to build another structure.
c. ___burned and covered with earth.
d. ___I don't know.

Answer 'c', "burned and covered with earth", was the correct response for this question. Again, there was no statistically significant difference among the responses between the two conditions (Table 25, Appendix F). A larger percentage of visitors in the control condition (76 percent) responded correctly. Sixty-four percent of the experimental

condition visitors selected the correct answer.

Based on the results of this question, the effect of interpretive technique on the visitor's immediate recall of the information presented in the experimental message was not statistically significant.

Total Scores

A t-test was used to analyze the average number of correct answers given by visitors for the four immediate information recall questions in each condition. No statistically significant difference was found (Table 26). The average scores were 3.1 and 2.6 (out of a possible 4) for the control and experimental messages respectively.

Table 26. T-test Results For Visitors' Total Scores On Immediate Information Recall Questions

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\bar{X}$ | 2.6 | 3.1 |
| SD | 1.17 | 1.00 |

t = 1.8325

df = 88

p = 0.0703

Experience of Visitors with Audio Messages

It was felt that experience with audio messages would possibly influence a visitor's rating of the experimental or control messages used in this study. A visitor who had heard messages in the past would have memories of those messages with which to compare the Adena house message. The visitors were asked to answer two questions concerning this previous experience.

Question 9.

During the past 12 months, how often have you heard a recorded message interpreting an exhibit? (not necessarily just museum exhibits)

| NEVER | | ONCE IN AWHILE | | VERY OFTEN |
|---|---|---|---|---|

The frequencies of responses labeled 1 (never) to 5 (very often) for the purpose of analysis were close between the experimental and control conditions (Table 27, Appendix F). A Chi-square analysis indicated no statistically significant difference among visitors' experiences in each condition. Therefore, as expressed through this question, no apparent bias was operating between the condition and the visitor's previous experience with audio messages.

Question 11.

During previous visits (excluding today) have you heard a recorded message at the Adena house exhibit?

____YES _____NO

There was no statistically significant difference between visitors who had heard an Adena house message in the control condition and in the experimental condition (Table 28, Appendix F). In fact, the frequencies were identical. Twenty-four percent of the visitors in each condition had heard an audio message at the Adena house Exhibit. Seventy-six percent had not.

Percentage Of Tape To Which The Visitor Listened.

The percentage of the recorded message to which the visitor listened was calculated from the amount of time to the nearest second that the visitor listened to the message.

This measure was considered to indicate message effectiveness and cost effectiveness. Visitors would listen to a recorded message considered effective longer than a recorded message considered ineffective. An effective recorded message would hold the visitor's attention longer than a message considered ineffective. If visitors did not listen to an entire recorded message than the extra dollars spent to produce that part of the message not listened to was wasted. If this aspect of cost effectiveness of the message was calculated by:

$$\frac{\text{Cost of Production}}{\text{Length of Message}}$$

then the message which was listened to significantly longer would be considered more cost effective.

There was no statistically significant difference between the average percentage of message to which the visitor listened and the condition (Table 29, Appendix F). The average percentages were 91 percent for the control message and 93 percent for the experimental message. A large majority of the 90 visitors in the study (77 percent) listened to the entire message. Only 6 percent listened to less than half (Table 30, Appendix F).

Therefore, the recorded message were considered equally message effective on this criterion. Because the production costs of each message was equal ($50.00), the recorded messages were considered equally cost effective on this criterion.

Revenue From The Sales Table

As a part of the cost effectiveness aspect of this study, a sales table displaying items related to Ohio's prehistoric Indians was set up near the Adena house exhibit. Visitors were able to purchase any item displayed at the museum's gift shop price.

During the three week sampling period only 11 sales were made. Among these 11 visitors who purchased an item, six had not listened to the Adena message (Table 31, p. 78). Only one visitor had listened to the message and was included in the study.

From these data no conclusions concerning the effect of either audio message on the sales of souvenir items could

Table 31. Revenue From The Sales Table

| Item(s) Purchased | Number | Message At The Adena House At Time Of Sale | Date Of Sale | Total Price |
|---|---|---|---|---|
| *Postcard | 6 | Experimental | 12-3-77 | $0.60 |
| Time Chart | 1 | Control | 12-4-77 | .35 |
| *Ohio's Prehistoric People | 1 | Control | 12-4-77 | 3.50 |
| **Ohio's Prehistoric People and Time | 1 | | | 3.50 |
| Time Chart | 1 | Experimental | 12-9-77 | .35 |
| Time Chart | 1 | Control | 12-11-77 | .35 |
| Postcards | 2 | Control | 12-17-77 | .20 |
| *Postcards | 2 | Experimental | 12-17-77 | .20 |
| Time Chart | 1 | Control | 12-18-77 | .35 |
| Duck Hawk Pipe | 1 | Control | 12-20-77 | 2.00 |
| *Postcards | 2 | Experimental | 12-20-77 | .20 |
| Duck Pot | 1 | Control | 12-21-77 | 5.00 |

*: Visitor heard message but was not included in study

**: Visitor heard message and was included in study

: Visitor did not hear message

be drawn.

Expressed Amount Of Money The Visitor Would Pay To Hear The Same Audio Message Again

At the end of the interview, the visitor was asked how much s/he would be willing to pay to hear the very same message that s/he had just heard. This question was meant to reflect both the cost and message effectiveness of the audio messages: if one message was more effective than the other, visitors would be willing to spend more to hear it than the less effective one. The more cost effective message would generate a higher "play it again" fee than the less cost effective message.

The results of a t-test indicated no statistically significant difference between the amount of money the visitor said s/he would spend and the condition (Table 32, Appendix F). The average amount for the control message was 19¢. For the experimental message, 25¢ was the average amount.

Forty-seven percent of the visitors said they would pay nothing to hear the message again. However, it appears that the message itself was not the deciding factor. Among visitors who rated the subject matter presented in the message 'very interesting', 43 percent would not pay to hear the message (Table 33, Appendix F). Many of these visitors followed their responses to this 'money' question with a reason which was recorded at the bottom of the questionnaire.

The most common reasons given follow:

1. The Ohio Historical Center is a state-supported institution and should charge visitors nothing at all.
2. It would be silly to pay to hear only one audio message. (In this case, some visitors said if more were provided they would be willing to purchase a key to hear them - "like at the zoo".)
3. It would be better to pay an admission fee and have everything else available at no charge.
4. "I came here today because it's free!"

These responses suggest that this 'money' question was not measuring only message quality. Visitors were considering other types of museum fees when answering the question.

## Summary of Results

### Message Effectiveness Aspects

Interest and Enjoyment Ratings. Based strictly on the ratings of the subject matter, speaker's voice, message text, and background accompaniment, no statistically significant difference between the control and experimental messages was found. However, considering the results of the analysis of the open-ended question responses, visitors did respond more favorably toward the experimental message than the control.

For each part of the message tested in this study, the

percentage of positively classified responses was greater for the experimental message than for the control:

| | Response Classification Positive % | Negative % |
|---|---|---|
| Subject Matter | 73 | 60 |
| Speaker's Voice | 81 | 66 |
| Message Text | 84 | 50 |
| Background Accompaniment | 73 | 62 |

These results suggest that interpretive technique did increase the visitor's interest in and enjoyment of the experimental message.

The above results strongly indicate that the rating scales used in this study were invalid. Although the average ratings of each part of the control and experimental messages which was tested were statistically equal, the open-ended question responses tend to support the hypothesis that interpretive technique does increase visitor interest and enjoyment of audio messages. The open-ended questions enabled visitors to express their opinions more accurately and precisely than the rating scales did.

Another finding based on the visitors' raings showed that people in different age groups percieved the audio messages differently. The messages were rated less interesting or less enjoyable by 20 to 26 year olds than by

visitors in other age groups.

Immediate Information Recall. Interpretive technique did not significantly increase the visitors' immediate recall of specific facts. For one of the four multiple-choice questions asked, fewer visitors hearing the experimental message answered correctly. Therefore, the way in which the experimental message was written may have been confusing for the visitor or may have been too vague to enable him/her to retain the specific fact. However, the use of interpretive technique did not significantly decrease the visitors' overall information recall scores.

Percentage of Message Heard by Visitor. The use of interpretive technique did not significantly affect the quality of the experimental message by increasing the percentage listened to by the visitors. A majority of people in both conditions heard the entire message.

Costs Aspects

Percentage of Message Heard by Visitor. For this aspect of cost effectiveness, both the experimental and control messages were found to be equal.

Sales Table Revenue. No conclusions concerning the influence of interpretive technique used to compose audio messages on sales revenue were made because of the very few sales transacted during the sampling period.

Expressed Amount of Money the Visitor Would Pay To Hear The Same Audio Message Again. The use of interpretive technique did not influence the amount of money that would supposedly be generated by the audio messages if the visitor had to pay to hear them. Visitors would not pay significantly more to hear the experimental message than the control message. Most visitors, even many whose rating of the subject matter was 'very interesting', said they would rather not pay to hear it.

# CHAPTER 6

## CONCLUSIONS AND RECOMMENDATIONS

According to the statistical test results of this study, there was no difference between the experimental and control audio messages. However, the open-ended question responses suggested that interpretive technique had a positive effect on the visitor's interest in and enjoyment of the experimental message.

Visitors' comments were more favorable for the subject matter as presented in the experimental message than in the control message. Also more positive comments were expressed for the speaker's voice in the experimental message. Responses to open-ended questions concerning the text of the message indicated that visitors found the experimental text simpler, less typical of museum tapes, and generally more enjoyable to listen to than the control message. Visitors also felt that the experimental background accompaniment somewhat more enjoyable than the control.

These findings strongly indicate that the research design employed to measure the differences in the messages was inappropriate and that the rating scales were invalid. Therefore, a different design and the use of different, previously validated scales might generate data which would support the hypotheses of the study.

In the following discussion, suggestions for a new design are listed under Interest and Enjoyment Ratings, Immediate Information Recall, Visitor Listening Time, The Sales Table, and Money The Visitor Would Pay To Hear The Audio Message Again.

## Suggestions For A New Design

### Interest and Enjoyment Ratings

1. Use rating scales that have been previously validated for use in this type of study.

The scales used to rate visitor interest and enjoyment may not have been valid for use in this type of study. Generally, visitors rated all four aspects of the message (subject matter, speaker's voice, message text, and background accompaniment) quite high which resulted in bunching of ratings at the upper end of the scales.

A possible solution to this problem may be to use more accurate words to describe the poles of the scales. Because 'interesting' or 'enjoyable' might have been interpreted

differently by different people, scales labeled with words that reflect visitors' responses to general questions used in this study (or in a pilot study) may be more valid. For example, based on the classifications of responses given in this study, enjoyment of the message text could be broken down into ratings of the simplicity of text (text advanced to text clear, simple) and originality of text (typical museum tape to original, innovative tape).

Also, valid scales may be found in another field such as broadcasting, theater, or communications.

2. Allow visitors to compare the messages directly.

This recommendation is based on an incident that occurred during the first pretest. During one very slow afternoon, four senior citizens (two couples) approached the Adena house exhibit and listened to the control message. On the spur of the moment, these visitors were asked to listen to another audio message (the experimental message) on the same subject. After listening to both messages, the visitors were asked which one they enjoyed more and why. During the conversation that followed, the visitors said that they enjoyed the experimental message more. They were able to point-out many factors intentionally written into the experimental message by using interpretive technique; such as the theme of 'firsts', active language, and simpler text. Although this would be a much more artificial experiment, results

may be more conclusive.

3. Design a questionnaire that allows the visitor to rate the messages one against another.

Possibly during this study the visitors were asked to rate an interpretive medium (audio messages) with which they may not have been familiar. Twenty-seven percent of the visitors had never heard an audio message. The visitor may not have known what to expect, therefore, unless totally unacceptable, any message might have been rated high.

Specific questions pertaining to the comparison of the messages could be developed. For example, after hearing both messages, the visitor could be asked, "In which message did the subject matter (Adena Indian culture) seem more interesting?" _____ the experimental _____ the control _____ neither _____ both the same The four possible responses could be randomly ordered to avoid any bias due to its location after the question.

Immediate Information Recall

4. Measure immediate information recall separately from the measurement of visitor interest and enjoyment.

If the visitor was allowed to hear two audio messages on the same subject for the purposes of comparison as suggested above, immediate information recall could not be measured validly because of the effect of hearing the same information twice. Therefore, a group of people different

from those included in the comparison of the two messages could be tested on the immediate information recall criterion after hearing either the experimental or control message under normal visitation conditions (at the exhibit).

5. Have the experimental message reviewed by a suitable expert.

The control message rated significantly higher percentage of correct responses than the experimental message on one of the immediate information recall questions. Possibly the text of the experimental message was too vague or confusing. If it would have been approved by an individual in English, semantics, communications, or journalism, this might not have happened. The weak spot might have been pointed out and corrected.

Visitor Listening Time

6. Use messages of equal length.

The lengths of the two messages used in this study were 2 minutes 18 seconds and 2 minutes 45 seconds for the control and experimental messages respectively. Because the experimental message was slightly longer than the control, the comparison of the percentage of listening time may not have been valid. If the experimental message had been the same length as the control more visitors may have listened to it all. Even with it being longer than the control, the percent of visitors listening to 100 percent of it was

slightly greater than the percent of visitors listening to 100 percent of the control.

7. Use longer messages to measure visitor listening time.

By designing a study using longer messages (possibly four or four and one-half minutes) the measure of the effectiveness of the message's attention holding ability might have been more valid. Visitors would be more inclined to walk away from a longer message which was less effective and listen to all or most of a more effective message.

The Sales Table

8. Improve merchandising of sales items.

Even though the study occurred during the month of December which is traditionally the highest retail sales month of the year, very few sales transactions occurred over the three-week sampling period. Also, some visitors in the Adena house exhibit area did not approach the sales table and look at the merchandise displayed. This may have been due to the location of the sales table, the display techniques, or the items displayed. Improving any one or all three factors may have increased sales overall.

9. Record sales over a longer period of time.

A difference in sales generated by the audio messages may have been discovered if the sales had been recorded over a longer time.

10. Record gift shop sales of items displayed at the sales table.

Possibly some visitors hearing the Adena house message purchased Indian related items from the second floor gift shop. This could have made a difference in the total sales figures. During the sales transaction the sales clerk could casually ask the visitor if s/he had heard the Adena house message. The visitor's response could be briefly noted in order to calculate the number of visitors hearing a message and purchasing an item.

Money The Visitor Would Pay To Hear The Audio Message Again.

11. Reword the question, "Now that you've heard the message at the Adena house and know what it involves, would you be willing to pay to hear it?"

Even though this question was purely hyphthetical, many visitors expressed a reluctance to spend money. Visitors did not understand that it was meant to reflect message quality only (the better message would generate more income). The question should be reworded so that the visitor does not consider the idea of admission fees or the fact that the museum is state-supported.

## Recommendations For Future Studies

All of the recommended studies are related studies involving message effectiveness and cost effectiveness of

interpretive media.

1. The comparison of the effectiveness of a personal service versus a non-personal service.

   For example, the message and cost effectiveness of an audio-visual presentation (slides accompanied by a sound track) could be compared to the same slide presentation given by a live interpretor.

2. The comparison of the effectiveness of two different personal or two different non-personal interpretive services.

   An audio-visual presentation (slides with sound track) could be compared to an exhibit designed to convey the same information.

3. The comparison of the effectiveness of an interpretive service employing interpretive technique versus an interpretive service not employing interpretive technique.

   Another study may compare the effectiveness of an interpretive exhibit to the effectiveness of a passive exhibit.

Interpretors have had an intuitive feeling that an interpretive service can be improved through the proper application of interpretive technique (Cherem, 1977; Sharpe, 1976; Tilden, 1967). Although the results reported in this thesis do not strongly support this feeling, it is still felt to be true. Additional studies testing the effectiveness of interpretive technique are needed. Data to support the active

application of interpretive technique when designing interpretive services would be beneficial to the field.

# APPENDIX A

## THE EXPERIMENTAL MESSAGE TEXT

The Experimental Message

We all remember firsts; the first day of the new year, the first man on the moon. Well, we could call the Adena Indians Ohio's "Civilization of Firsts". The Adena were the first gardeners, the first pottery-makers, and the first mound-builders in the Ohio Valley. They also constructed the first known permanent dwelling discovered in the area.

Just for a moment, picture your own home in your mind's eye. (PAUSE.) Before you is a replica of an Adena house as we think it appeared. Adena houses ranged from the size of our replica to the size of an average modern master bedroom. Imagine your grandparents, aunts, uncles, and cousins sharing even one of the larger houses with you! What we could consider very cramped living conditions was a common practice among Adena families. Occasionally, other family members would set-up housekeeping nearby, forming small villages of three to five houses.

The Adena were the first Ohio Indians to raise vegetables. Although they continued to hunt, fish, and gather wild plants, their primitive gardens yielded a steady supply of food. Pumpkins and squash, often found in our own backyard's vegetable patches, were cultivated by the Adena and were probably prepared in much the same way as we do. These early gardeners also munched on the seeds of sunflowers, amaranths, and goosefoot plants nurtured to a

ripe, nutritious stage. Yellow, orangs, and green gourds, dried and used by the Adena as containers, brightened some gardens as well.

Today we have an enormous variety of pottery and dishes from which to choose, such as china, plastic, wood, or stoneware. But the Adena people had a choice of one-ceramic. In fact, Adena potters fashioned the first known ceramics in the Ohio Valley. Even though their pottery was crude and easily broden, they found it useful for cooking and storing food.

The Ohio Valley is dotted with ancient Indian burial mounds built by the Adena, the first to practice this burial custom. When an individual died he or she would be buried in the dirt floor of his or her house. Then the entire structure would be pulled down and covered with earth, marking the gravesite. By painstakingly excavating these mounds, modern archaeologists have found fascinating relics thousands of years old. During your visit today take time to look at these ancient remnants of Ohio's "Civilization of Firsts" - the Adena Indians.

# APPENDIX B

## THE CONTROL MESSAGE TEXT

The Control Message

This replica of an Adena house represents the earliest known type of permanent dwelling constructed by the prehistoric Indians in the Ohio Valley. The peoples that lived before the Adena, the Paleo Indians and the Archaic Indians, were nomadic and moved from place to place in search of food. The Adena, however, evidently had a stable food supply that permitted them to live in one spot for a relatively long period of time, long enough to build substantial houses.

While they hunted, fished, and gathered a wide variety of wild plants, there's some evidence that the Adena also cultivated sunflowers, pumpkins, or squash. Amaranths and goosefoot yielded large quantities of edible seeds. Squash and pumpkins were probably eaten much the same was as we do today. Gourds may have been grown for use as containers. Some Adena houses were nearly sixty feet in diameter and may well have been built for ceremonial purposes. However, most Adena structures were smaller, between eighteen and forty-five feet in diameter and were dwellings inhabited be a single family or perhaps by a family group including grandparents or uncles, aunts, and cousins. Other relatives might live in nearby houses thus forming a small village of three to five dwellings.

Evidently the Indians sat and slept on skins and stored their possessions on wooden racks or hung them on the wall

posts or from the rafters. Food was stored and cooked in large pottery vessels, the earliest known ceramics in the Ohio Valley. Although pottery is very useful, it's also fragile and so unsuitable for a nomadic way of life. However, the Adena, being sedentary people, found the ceramic pots and jars to be very practical. Even so their pottery was poorly fired and generally rather crude in comparison to later prehistoric materials.

Most Adena houses were probably burned or torn down when the occuponts moved away. But occasionally certain individuals, perhaps important members of their communities, were buried in graves dug in the house floor. The houses were than destroyed and the remains of the structures and the graves were covered with mounds of earth, perhaps as memorials to the dead. By carefully excavating these mounds, modern archaeologists are able to reconstruct much of the life of the Adena Indians.

# APPENDIX C

## THE AUDIO MESSAGES ANALYZED FOR INTERPRETIVE TECHNIQUE

This replica of an Adena house represents the earliest known type of permanent dwelling constructed by the prehistoric Indians in the Ohio Valley. The peoples that lived before the Adena, the Paleo Indians and the Archaic Indians, were nomadic and moved from place to place in search of food. The Adena, however, evidently had a stable food supply that permitted them to live in one spot for a relatively long period of time, long enough to build substantial houses.

While they hunted, fished, and gathered a wide variety of wild plants, there's some evidence that the Adena also cultivated sunflowers, pumpkins, or squash. Amaranths and goosefoot yielded large quantities of edible seeds. Squash and pumpkins were probably eaten much the same way as we do today. Gourds may have been grown for use as containers.

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posts or from the rafters. Food was stored and cooked in large pottery vessels, the earliest known ceramics in the Ohio Valley. Although pottery is very useful, it's also fragile and so unsuitable for a nomadic way of life. However, the Adena, being sedentary people, found the ceramic pots and jars to be very practical. Even so their pottery was poorly fired and generally rather crude in comparison to later prehistoric materials.

Most Adena houses were probably burned or torn down when the occupants moved away. But occasionally certain individuals, perhaps important members of their communities, were buried in graves dug in the house floor. The houses were than destroyed and the remains of the structures and the graves were covered with mounds of earth, perhaps as memorials to the dead. By carefully excavating these mounds, modern archaeologists are able to reconstruct much of the life of the Adena Indians.

Key To The Above Analysis

----- Active language 0 occurences

_____ Personal words and phrases 9 occurences

..... Interpretive principle

- relate the interpretive message to the life of the audience.

The Experimental Message

We all remember firsts; the first day of the new year, the first man on the moon. Well, we could call the Adena Indians Ohio's "Civilization of Firsts". The Adena were the first gardeners, the first pottery-makers, and the first mound-builders in the Ohio Valley. They also constructed the first known permanent dwelling discovered in the area.

Just for a moment, picture your own home in your mind's eye. (PAUSE.) Before you is a replica of an Adena house as we think it appeared. Adena houses ranged from the size of our replica to the size of an average modern master bedroom. Imagine your grandparents, aunts, uncles, and cousins sharing even one of the larger houses with you! What we would consider very cramped living conditions was a common practice among Adena families. Occasionally, other family members would set-up housekeeping nearby, forming small villages of three to five houses.

The Adena were the first Ohio Indians to raise vegetables. Although they continued to hunt, fish, and gather wild plants, their primitive gardens yielded a steady supply of food. Pumpkins and squash, often found in our own backyard's vegetable patches, were cultivated by the Adena and were probably prepared in much the same way as we do. These early gardeners also munched on the seeds of sunflowers, amaranths, and goosefoot plants nurtured to a

ripe, nutritious stage. Yellow, orange, and green gourds, dried and used by the Adena as containers, brightened some gardens as well.

Today we have an enormous variety of pottery and dishes from which to choose, such as china, plastic, wood, or stoneware. But the Adena people had a choice of one - ceramic. In fact, Adena potters fashioned the first known ceramics in the Ohio Valley. Even though their pottery was crude and easily broken, they found it useful for cooking and storing food.

The Ohio Valley is dotted with ancient Indian burial mounds built by the Adena, the first to practice this burial custom. When an individual died he or she would be buried in the dirt floor of his or her house. Then the entire structure would be pulled down and covered with earth, marking the gravesite. By painstakingly excavating these mounds, modern archaeologists have found fascinating relics thousands of years old. During your visit today take time to look at these ancient remnants of Ohio's "Civilization of Firsts" - the Adena Indians.

Key To The Above Analysis

----- Active language 7 occurences

_____ Personal words and phrases 29 occurences

..... Interpretive principles

- relate the interpretive message to the life of the audience.

- strive for message unity.

# APPENDIX D

## PRETEST AND FINAL QUESTIONNAIRES

PRETEST QUESTIONNAIRE

A STUDY OF EXHIBIT AUDIO MESSAGES

The Ohio State University
Student Research
in cooperation with
The Ohio Historical Society

The following questions pertain to the recorded message which you have just heard. Your honest answers will help in providing better exhibit interpretation.

PART I.

Please circle the number (1-4) which best describes your answer to the question below.

1. On a scale of 1 to 4, please rate the SUBJECT MATTER (Adena Indian culture) presented in the message.

1 — 2 — 3 — 4

NOT AT ALL INTERESTING — VERY INTERESTING

2. On a scale of 1 to 4, please rate the WAY that the message was presented.

a. Consider the speaker's voice.

1 — 2 — 3 — 4

NOT AT ALL ENJOYABLE — VERY ENJOYABLE

b. Consider the words the speaker used.

1 — 2 — 3 — 4

NOT AT ALL ENJOYABLE — VERY ENJOYABLE

c. Consider the background music.

1 — 2 — 3 — 4

NOT AT ALL ENJOYABLE — VERY ENJOYABLE

3. What did you enjoy MOST about the recorded message? _____

_____

_____

4. What did you enjoy LEAST about the recorded message? _____

_____

_____

PART II.

Please indicate your response to the following questions.

5. Besides pumpkins and squash, the Adena also cultivated

   a. ___sunflowers which provided edible seeds.

   b. ___corn which was ground into flour.

   c. ___a variety of beans which were dried and stored.

   d. ___I don't know.

6. The Adena Indians probably used gourds

   a. ___as a food source.

   b. ___as containers.

   c. ___as house decorations.

   d. ___I don't know.

7. Adena pottery is the earliest known type of _____ pottery found in the Ohio Valley.

   a. ___wooden

   b. ___ceramic

   c. ___stone

   d. ___I don't know.

8. Occasionally the Adena buried individuals who had died in the dirt floor of a house. These houses were then

   a. ___left standing.

   b. ___torn down so that the materials could be used to build another structure.

   c. ___burned and covered with earth.

   d. ___I don't know.

PART III.

Please respond to the following questions.

9. How many times (including today) have you visited the Ohio Historical Center since last October, 1976? _____ 1 _____ 4

_____ 2 _____ 5

_____ 3 _____ 6 or more

10. During previous visits (EXcluding today), have you heard a recorded message at the Adena House exhibit? _____ YES

_____ NO

11. AGE CATEGORY: _____13-19 _____37-46 _____67 & UP

_____20-26 _____47-56

_____27-36 _____57-66

12. SEX: _____FEMALE

_____MALE

13. OCCUPATION: _____

14. ZIP CODE: _____

THANK YOU VERY MUCH!!!!

FINAL QUESTIONNAIRE

A STUDY OF EXHIBIT AUDIO MESSAGES

The Ohio State University
Student Research
in cooperation with
The Ohio Historical Society

The following questions pertain to the recorded message which you have just heard. Your frank opinions will help in providing better exhibit interpretation.

PART I.

Please circle the number (1-6) which best describes vour answer to the questions below.

1. Please rate the SUBJECT MATTER (Adena Indian culture) presented in the message.

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL INTERESTING | | | | | VERY INTERESTING |

a. What are your reasons for the above rating? _____

_____

2. Do you feel the SPEAKER'S VOICE was:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

a. What are your reasons for the above rating? _____

_____

3. Do you feel the WORDS the speaker used were:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

a. What are your reasons for the above rating? _____

_____

4. Do you feel the BACKGROUND ACCOMPANIMENT was:

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| NOT AT ALL ENJOYABLE | | | | | VERY ENJOYABLE |

a. What are your reasons for the above rating? _____

_____

PART II.

Please indicate only ONE response to the following multiple choice questions.

5. Besides pumpkins and squash, the Adena also cultivated

a. ____sunflowers which provided edible seeds.

b. ____corn which was ground into flour.

c. ____a variety of beans which were dried and stored.

d. ____I don't know.

6. The Adena Indians probably used gourds

a. ____as a food source.

b. ____as containers.

c. ____as house decorations.

d. ____I don't know.

7. Adena pottery is the earliest known type of _____ pottery found in the Ohio Valley.

a. ____wooden

b. ____ceramic

c. ____stone

d. ____I don't know.

8. Occasionally the Adena buried individuals who had died in the dirt floor of a house. These houses were then

a. ____left standing.

b. ____torn down so the materials could be used to build another structure.

c. ____burned and covered with earth.

d. ____I don't know.

PART III.

Please respond to the following questions.

9. During the past 12 months, how often have you heard a recorded message interpreting an exhibit? (Not necessarily just exhibits in museums.)

/ / / / /

NEVER — ONCE IN A WHILE — VERY OFTEN

10. During the past 12 months, how many times (INcluding today) have you visited the Ohio Historical Center?

____1 ____3 ____5

____2 ____4 ____6 or more

11. During previous visits (EXcluding today), have you heard a recorded message at the Adena House exhibit?

_____YES _____NO

12. AGE CATEGORY: ____13-19 ____37-46 ____67 & UP

____20-26 ____47-56

____27-36 ____57-66

13. SEX: ____FEMALE ____MALE

14. OCCUPATION: _____

15. ZIP CODE: _____

ADDITIONAL COMMENTS: _____

THANK YOU VERY MUCH!!!!

# APPENDIX E

## INTERVIEW FORMAT

Interview Format

"Hi! My name is Susan Hambleton. I'm a graduate student at Ohio State. I'm conducting a study in cooperation with the Ohio Historical Center concerning the recorded message you just listened to at the Adena house. If you have a few minutes, I'd like to ask your opinion of the message and have you fill-out a brief questionnaire."

(Showing the visitor the rating scales on the first page of the questionnaire) "First of all, could you rate the subject matter of the message which is Adena Indian culture on this scale of one through six with one being NOT AT ALL INTERESTING and six being VERY INTERESTING?." (Visitor's response.) Could you tell me why you rated it a ____?"

"Next considering such things as the speaker's rate of speech, inflections in his voice, and his tone of voice, could you rate the speaker's voice on this scale of one to six with one being NOT AT ALL ENJOYABLE and six being VERY ENJOYABLE to listen to?" (Visitor's response.) Why did you rate his voice a _____?" (If the visitor did not mention the speaker's rate of speech in his/her response, I asked) "What did you think of the speaker's rate of speech?"

"Next could you rate the words the speaker used on this scale from one to six? By this I mean the words used to convey the message. (Visitor's response.) Why did you rate it a ____?"

"Could you rate the background accompaniment on this scale of one to six with one being NOT AT ALL ENJOYABLE to listen to and six being VERY ENJOYABLE to listen to? (Visitor's response.) Why did you rate the background accompaniment a ____?" (If the visitor did not comment on the level of sound of the background accompaniment throughout the message, I asked) What did you think of the level of sound of the background accompaniment throughout the message?"

"O.K. Thank you. Now please fill-out the questionnaire. These are four multiple-choice questions. There's one response for each. If you aren't sure of the answer, please mark 'I don't know'. It will help us to pinpoint weak spots in the message later. On this question (Question 9) just circle the slash which best corresponds to your answer."

(The visitor would than fill-out the questionnaire and return it to me.) "Before you leave, I'd like to ask one more question. The Ohio Historical Center does not intend to ask visitors to pay to hear exhibit messages but, for the purposes of this survey, now that you've heard the message at the Adena house and know what it involves, would you be willingly to pay to hear it? (If the visitor said yes, I'd ask) How much would you be willing to pay? (If the visitor said no, I responded) "Fine. Thank you for your help and have a nice visit."

(The expressed amount of money was recorded at the bottom of the last page of the questionnaire.)

# APPENDIX F

# STATISTICAL ANALYSIS TABLES

Table 4. Sex Of Visitors By Condition

| | | Experimental | Control |
|---|---|---|---|
| Female | No. | 19 | 20 |
| | % | 42 | 44 |
| Male | No. | 26 | 25 |
| | % | 58 | 36 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$X^2 = 1.60$

df = 1

p = 0.22

Table 5. Age Groups Of Visitors By Condition

| Age Groups (Years) | | Conditions: Experimental | Conditions: Control |
|---|---|---|---|
| 13-19 | No. | 2 | 11 |
| | % | 4 | 24 |
| 20-26 | No. | 21 | 15 |
| | % | 47 | 33 |
| 27-36 | No. | 13 | 8 |
| | % | 29 | 18 |
| 37-46 | No. | 2 | 7 |
| | % | 4 | 16 |
| 47-56 | No. | 4 | 2 |
| | % | 9 | 4 |
| 57-66 | No. | 3 | 2 |
| | % | 7 | 4 |
| 67 & UP | No. | 0 | 0 |
| | % | 0 | 0 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$X^2 = 8.049$
df = 3
p = 0.045

Table 7. Ratings Of Subject's Level Of Interest By Visitor's Sex

| Ratings | | Sex: Female | Sex: Male |
|---|---|---|---|
| 1 | No. | 0 | 0 |
| | % | 0 | 0 |
| 2 | No. | 1 | 2 |
| | % | 1 | 2 |
| 3 | No. | 1 | 5 |
| | % | 1 | 6 |
| 4 | No. | 8 | 10 |
| | % | 9 | 11 |
| 5 | No. | 13 | 21 |
| | % | 14 | 23 |
| 6 | No. | 16 | 13 |
| | % | 18 | 14 |

$X^2 = 0.642$

df = 2

p = 0.7251

Table 8. Ratings Of Subject's Level Of Interest By Visitor Age Groups

| Ratings | | Age Groups (years) 13-19 | 20-26 | 27-36 | 37-46 | 47-56 | 57-66 | 67 UP |
|---|---|---|---|---|---|---|---|---|
| 1 | No. | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | No. | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | % | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 3 | No. | 0 | 4 | 1 | 0 | 1 | 0 | 0 |
| | % | 0 | 4 | 1 | 0 | 1 | 0 | 0 |
| 4 | No. | 2 | 12 | 1 | 3 | 0 | 0 | 0 |
| | % | 2 | 13 | 1 | 3 | 0 | 0 | 0 |
| 5 | No. | 8 | 14 | 8 | 3 | 1 | 0 | 0 |
| | % | 9 | 16 | 9 | 3 | 1 | 0 | 0 |
| 6 | No. | 2 | 5 | 10 | 3 | 4 | 5 | 0 |
| | % | 2 | 6 | 11 | 3 | 4 | 6 | 0 |

$X^2 = 11.157$

$df = 6$

$p = 0.0836$

Table 11. Ratings Of Speaker's Voice By Visitor's Sex

| Ratings | | Sex: Female | Sex: Male |
|---|---|---|---|
| 1 | No. | 0 | 1 |
| | % | 0 | 1 |
| 2 | No. | 2 | 2 |
| | % | 2 | 2 |
| 3 | No. | 2 | 4 |
| | % | 2 | 4 |
| 4 | No. | 4 | 9 |
| | % | 4 | 10 |
| 5 | No. | 10 | 18 |
| | % | 11 | 20 |
| 6 | No. | 21 | 17 |
| | % | 23 | 19 |

$X^2 = 1.447$

df = 2

p = 0.4850

Table 12. Ratings Of Speaker's Voice By Visitor Age Groups

| Ratings | | Age Groups (years) 13-19 | 20-26 | 27-36 | 37-46 | 47-56 | 57-66 | 67 UP |
|---|---|---|---|---|---|---|---|---|
| 1 | No. | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | No. | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| | % | 1 | 3 | 0 | 0 | 0 | 0 | 0 |
| 3 | No. | 0 | 4 | 1 | 1 | 1 | 0 | 0 |
| | % | 0 | 4 | 1 | 1 | 1 | 0 | 0 |
| 4 | No. | 1 | 6 | 4 | 2 | 0 | 0 | 0 |
| | % | 1 | 7 | 4 | 2 | 0 | 0 | 0 |
| 5 | No. | 3 | 9 | 7 | 3 | 4 | 2 | 0 |
| | % | 3 | 10 | 8 | 3 | 4 | 2 | 0 |
| 6 | No. | 7 | 14 | 9 | 3 | 2 | 3 | 0 |
| | % | 8 | 16 | 10 | 3 | 2 | 3 | 0 |

$X^2 = 11.193$

$df = 6$

$p = 0.0826$

Table 15. Ratings of Message Text By Visitor's Sex

| Rating | | Sex: Female | Sex: Male |
|---|---|---|---|
| 1 | No. | 0 | 0 |
| | % | 0 | 0 |
| 2 | No. | 0 | 0 |
| | % | 0 | 0 |
| 3 | No. | 3 | 3 |
| | % | 3 | 3 |
| 4 | No. | 5 | 11 |
| | % | 6 | 12 |
| 5 | No. | 14 | 19 |
| | % | 16 | 21 |
| 6 | No. | 16 | 18 |
| | % | 18 | 20 |

Missing Observation = 1

$X^2 = 0.479$

df = 1

p = 0.4889

Table 16. Ratings Of Message Text By Visitor Age Groups

| Ratings | | Age Groups (years) 13-19 | 20-26 | 27-36 | 37-46 | 47-56 | 57-66 | 67 UP |
|---|---|---|---|---|---|---|---|---|
| 1 | No. | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | No. | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | No. | 0 | 5 | 0 | 1 | 0 | 0 | 0 |
| | % | 0 | 6 | 0 | 1 | 0 | 0 | 0 |
| 4 | No. | 1 | 10 | 4 | 0 | 0 | 1 | 0 |
| | % | 1 | 11 | 4 | 0 | 0 | 1 | 0 |
| 5 | No. | 7 | 11 | 5 | 5 | 4 | 1 | 0 |
| | % | 8 | 12 | 6 | 6 | 4 | 1 | 0 |
| 6 | No. | 5 | 9 | 12 | 3 | 2 | 3 | 0 |
| | % | 6 | 10 | 13 | 3 | 2 | 3 | 0 |

Missing Observation = 1

$X^2 = 10.702$

df = 3

p = 0.0135

Table 19. Ratings Of Background Accompaniment By Visitor's Sex

| Ratings | | Sex: Female | Sex: Male |
|---|---|---|---|
| 1 | No. | 2 | 1 |
| | % | 2 | 1 |
| 2 | No. | 3 | 6 |
| | % | 3 | 7 |
| 3 | No. | 2 | 6 |
| | % | 2 | 7 |
| 4 | No. | 9 | 10 |
| | % | 10 | 11 |
| 5 | No. | 6 | 6 |
| | % | 7 | 7 |
| 6 | No. | 16 | 21 |
| | % | 18 | 24 |

Missing Observations = 2

$X^2 = 0.136$

df = 2

p = 0.9344

Table 20. Ratings Of Background Accompaniment By Visitor Age Groups

| Ratings | | Age Groups (years) 13-19 | 20-26 | 27-36 | 37-46 | 47-56 | 57-66 | 66 UP |
|---|---|---|---|---|---|---|---|---|
| 1 | No. | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | % | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | No. | 1 | 4 | 2 | 1 | 1 | 0 | 0 |
| | % | 1 | 5 | 2 | 1 | 1 | 0 | 0 |
| 3 | No. | 1 | 5 | 1 | 1 | 0 | 0 | 0 |
| | % | 1 | 6 | 1 | 1 | 0 | 0 | 0 |
| 4 | No. | 0 | 6 | 4 | 5 | 1 | 3 | 0 |
| | % | 0 | 7 | 5 | 6 | 1 | 3 | 0 |
| 5 | No. | 1 | 5 | 5 | 0 | 1 | 0 | 0 |
| | % | 1 | 6 | 6 | 0 | 1 | 0 | 0 |
| 6 | No. | 9 | 15 | 6 | 2 | 3 | 2 | 0 |
| | % | 10 | 17 | 7 | 2 | 3 | 2 | 0 |

Missing Observations = 2

$X^2 = 4.724$

df = 6

p = 0.5797

Table 22. Frequencies Of Correct/Incorrect Answers For Information Question 5 By Condition

| | | Condition | |
|---|---|---|---|
| | | Experimental | Control |
| Correct | No. | 20 | 35 |
| | % | 44 | 78 |
| Incorrect | No. | 25 | 20 |
| | % | 56 | 22 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$X^2 = 10.519$

df = 1

p = 0.0012

Table 23. Frequencies Of Correct/Incorrect Answers For Information Question 6 By Condition

| | | Condition | |
|---|---|---|---|
| | | Experimental | Control |
| Correct | No. | 31 | 32 |
| | % | 69 | 71 |
| Incorrect | No. | 14 | 13 |
| | % | 31 | 29 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$x^2 = 0.053$

df = 1

p = 0.8181

Table 24. Frequencies Of Correct/Incorrect Answers For Information Question 7 By Condition

| | | Condition | |
|---|---|---|---|
| | | Experimental | Control |
| Correct | No. | 39 | 37 |
| | % | 87 | 82 |
| Incorrect | No. | 6 | 8 |
| | % | 13 | 18 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$X^2 = 0.338$

df = 1

p = 0.5608

Table 25. Frequencies Of Correct/Incorrect Answers For Information Question 8 By Condition

| | | Condition | |
|---|---|---|---|
| | | Experimental | Control |
| Correct | No. | 29 | 34 |
| | % | 64 | 76 |
| Incorrect | No. | 16 | 11 |
| | % | 36 | 24 |
| Total | No. | 45 | 45 |
| | % | 50 | 50 |

$X^2 = 1.323$

df = 1

p = 0.2501

Table 27. Visitors' Previous Exposure To Audio Messages Interpreting An Exhibit

| | | | Condition | |
|---|---|---|---|---|
| | | | Experimental | Control |
| NEVER | 1 | No. | 12 | 13 |
| | | % | 27 | 29 |
| | 2 | No. | 5 | 7 |
| | | % | 11 | 16 |
| | 3 | No. | 17 | 17 |
| | | % | 38 | 38 |
| | 4 | No. | 7 | 6 |
| | | % | 16 | 13 |
| VERY OFTEN | 5 | No. | 4 | 2 |
| | | % | 9 | 4 |

$X^2 = 1.220$

df = 4

p = 0.8501

Table 28. Frequencies Of Visitors Who Had Previously Heard An Audio Message At The Adena House

| | | Condition | |
|---|---|---|---|
| | | Experimental | Control |
| YES | No. | 11 | 11 |
| | % | 24 | 24 |
| NO | No. | 34 | 34 |
| | % | 76 | 76 |

Table 29. T-test Results For Percentage Of Tape To Which The Visitor Listened

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\overline{X}$ | 92% | 90% |
| SD | 14.72 | 19.26 |

t = 0.6087

df = 88

p = 0.5443

Table 30. Percentage Of Message To Which Visitor Listened By Condition

| Condition | | Percent | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 | 100 |
| Experimental | No. | 1 | 2 | 2 | 3 | 2 | 1 | 34 |
| | % | 2 | 4 | 4 | 7 | 4 | 2 | 76 |
| Control | No. | 4 | 3 | 2 | 0 | 0 | 1 | 35 |
| | % | 9 | 7 | 4 | 0 | 0 | 2 | 78 |
| Total | No. | 5 | 5 | 4 | 3 | 2 | 1 | 69 |
| | % | 6 | 6 | 4 | 3 | 2 | 1 | 77 |

Table 32. T-test Results For The Expressed Amount Of Money The Visitor Would Be Willing To Pay To Hear The Audio Message Again.

| | Condition | |
|---|---|---|
| | Experimental | Control |
| $\overline{X}$ | $0.25 | $0.19 |
| SD | 40.8 | 30.6 |

t = 0.8034

df = 88

p = 0.4239

Table 33. Visitor's Rating Of Subject Matter Level Of Interest And Expressed Amount Of Money The Visitor Would Be Willing To Pay To Hear The Audio Message Again

| Rating | | Dollars ($) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 0.10 | 0.15 | 0.25 | 0.50 | 0.75 | 1.00 Or More |
| 1 | No. | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | No. | 0 | 2 | 0 | 0 | 0 | 0 | 1 |
| | % | 0 | 2 | 0 | 0 | 0 | 0 | 1 |
| 3 | No. | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| | % | 2 | 1 | 0 | 3 | 0 | 0 | 0 |
| 4 | No. | 13 | 2 | 0 | 2 | 1 | 0 | 0 |
| | % | 14 | 2 | 0 | 2 | 1 | 0 | 0 |
| 5 | No. | 15 | 6 | 1 | 5 | 2 | 1 | 4 |
| | % | 17 | 7 | 1 | 6 | 2 | 1 | 4 |
| 6 | No. | 12 | 3 | 0 | 7 | 4 | 0 | 3 |
| | % | 13 | 3 | 0 | 8 | 4 | 0 | 3 |

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